Wisconsin Department of Natural Resources
Bureau of Watershed Management (WT/3)
101 S. Webster Street
PO Box 7921
Madison, WI 53707-7921
dnr.wi.gov

Final Report

Urban Nonpoint Source & Storm Water Construction & Targeted Runoff Management Small-scale Urban TMDL Grant Program

Form 3400-189U (03/16)

NOTICE: This document is required under s. 281.65 & s. 281.66, Wis. Stats., and chs. NR 153, 154, and 155. Wis. Adm. Code. A final project report must be submitted as part of the final reimbursement request. Personally identifiable information contained in this form will be used for determining reimbursement eligibility in the Urban Nonpoint Source & Storm Water and Targeted Runoff Management Grant Programs and will not be used for any other purpose.

INSTRUCTIONS: Send the completed, electronic copy of this form and all attachments to the Department of Natural Resources (DNR) Region Nonpoint Source Coordinator. Please read all instructions prior to completion.

Grant Type

(●) Urban Nonpoint Source Construction ( ) TRM Small-scale Urban TMDL

Project & Location Information

Governmental Unit Name	Grant Number
Kaukauna, City of	~~USC-LF03-44141-15A~~ USC-LF03-44241-15A

Project Name
Kavanaugh Pond

County	Watershed Name	12-Digit HUC
Outagamie	Plum &Kankapot Creeks	040302040204

Project Contact Name	Phone Number	E-mail Address
John Neumeier	(920) 766-6305	neumeier@kaukauna-wi.org

☐ For a project with multiple site locations, an aerial photo map is attached with each site location labeled.

Site Location - 1

Additional sites may be added to the project by clicking the [+ Loc] button.

Site Name	Nearest Receiving Waterbody
Kavanaugh Pond	Plum Creek

Quarter/Quarter	Quarter	Section	Township	Range	E / W	Latitude	Longitude
NW	NW	32	21	19	E	44.2551	

Summary of Results - 1

Additional BMPs may be added to this site by clicking the [+] button.

Best Management Practice Installed	Surface Area (sq. ft.)	Drainage Area (Acres)	Load Reduction				Total Construction Cost
			TSS %	TSS (tons/yr)	P (lbs/yr)	N (lbs/yr)	
Wet Detention Pond	34,412	42	84	3.5	18		$174,580

Site Location Attachment - 1

Check the box if the required information for the site is attached:

☒ Photos of pre-and post-implementation of BMP(s)
☒ Load reduction modeling documents
☒ Aerial photo map of site with BMPs labeled
☐ Water quality monitoring results/summary, if applicable

Site Information - 1

Narrative space will expand to fit.

Project location: latitude 44.2551, longitude -88.2299.

The City of Kaukauna obtained a Construction Grant from WDNR for design and construction of a new stormwater quality pond. The purpose of the construction project is to reduce non-point source pollution prior to discharge into Plum Creek, a 303(d) listed water body and is part of the Lower Fox River TMDL. The project will assist the City with TMDL / NR 216 WPDES Municipal Permit compliance and NR 151.13 requirements. WinSLAMM was used to determine the pollutant reduction for the pond. Installation of storm sewer and associated restoration in road ditches and along a private property farm field, needed to be coordinated with the adjacent property owners.

☒ DNR may use this site as a success story to meet state and federal reporting needs.

Additional Project Information

Narrative space will expand to fit.

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Grantee Certification

A responsible government official (authorized signatory) must authorize and date the final report form and submit it electronically to the DNR Regional Nonpoint Source Coordinator.

I certify that, to the best of my knowledge, the project is complete and the information contained in this final report and attachments is correct and true.

Name of Authorized Government Official	Title of Authorized Government Official	Date
John W. Sundelius, P.E., M.P.A.	Director of Public Works/City Engineer	12/12/2016

For DNR Use Only

☒ Received complete reports with all attachments. ☒ Practices implemented were consistent with the grant agreement.

Comments about this project:
Longitude is -88.2299

Name of Nonpoint Source Coordinator	Date
Erin Hanson	12/27/2016

Send the Final Report and attachments to the Community Financial Assistance Grants Manager and to the Runoff Management Grants Coordinator. Keep a printed copy for the Region file.

NORTH

20 10 0 20

SCALE – FEET

GARDEN

MATCH

724

723

30' INGRESS/EGRESS AND STORM SEWER EASEMENT

FILL AREA

512'–30" RCP

SILT FENCE

SOIL STOCKPILE

LIMITS OF DISTURBANCE (3.4 ACRES)

6" CPP = 719.51

15" ENDWALL
(INV= ~~718.75~~ 718.89
PLACE MEDIUM
RIP–RAP (10 CY)

STO CB 5
RIM= ~~722.10~~ 722.31
INV= ~~718.90~~ 719.16
D= ~~3.10~~ 3.15

POND PROPERTY BOUNDARY

21'–15" RCP CL III @ ~~0.50%~~
(27' WTH ENDWALL) 1.0%

MH 4

OUTLET STRUCTURE (SEE DETAIL).
PLACE MEDIUM RIP–RAP (5 CY)

15' SAFETY SHELF

722

23'–30" RCP CL III
(29' WITH ENDWALL)

32'–15" RCP CL III @ 0.13%
(38' WITH ENDWALL)
INV= ~~718.75 (N)~~ 718.95
INV= ~~718.70 (S)~~ 718.93
INSTALL ANTI–SEEP COLLAR

30" ENDWALL
(INV= ~~718.75~~) 718.88
PLACE MEDIUM
RIP–RAP (12 CY)

NWSEL= 718.75
(0.79 ACRES)
BOTTOM= 710.75

2–YEAR ELEVATION= 720.96
10–YEAR ELEVATION= 721.55
100–YEAR ELEVATION= 721.88

3:1

3:1

721

711 712 713 714 715 716 717

SILT FENCE

15" ENDWALL
(INV= ~~718.75~~) 718.93
PLACE MEDIUM
RIP–RAP (10 CY)

24'–15" RCP CL III @ 3.9%
(36' WITH ENDWALL)

FEMA FLOODPLAIN

719 721 723 720 722

10' TOP WIDTH

PROPOSED DITCH

FEMA FLOODPLAIN

720

718

723 721 720 722

15" ENDWALL
(INV= ~~720.15~~) 720.31
PLACE MEDIUM
RIP–RAP (5 CY)

SILT FENCE

8' BERM

PLACE MEDIUM RIP–RAP
(10 CY), ABOVE THE TOP
OF BANK & WETLAND

20' OVERFLOW
ELEV= ~~721.60~~ 721.45
(SEE DETAIL)

TURF REINFORCEMENT MAT
(135 SY)(WDOT CL. III, TYPE C))

WETLAND BOUNDARY

719

EX STREAM

FEMA FLOODPLAIN

C.T.H. CE

TV FO

McMAHON
ENGINEERS ARCHITECTS
1445 McMAHON DRIVE NEENAH, WI 54956
Mailing: P.O.BOX 1025 NEENAH, WI 54957-1025
Tel: (920) 751-4200 Fax: (920) 751-4284
www.mcmgrp.com

NO.	DATE	REVISION

KAVANAUGH POND
CITY OF KAUKAUNA, OUTAGAMIE COUNTY, WISCONSIN
GRADING & EROSION CONTROL PLAN PHASE II

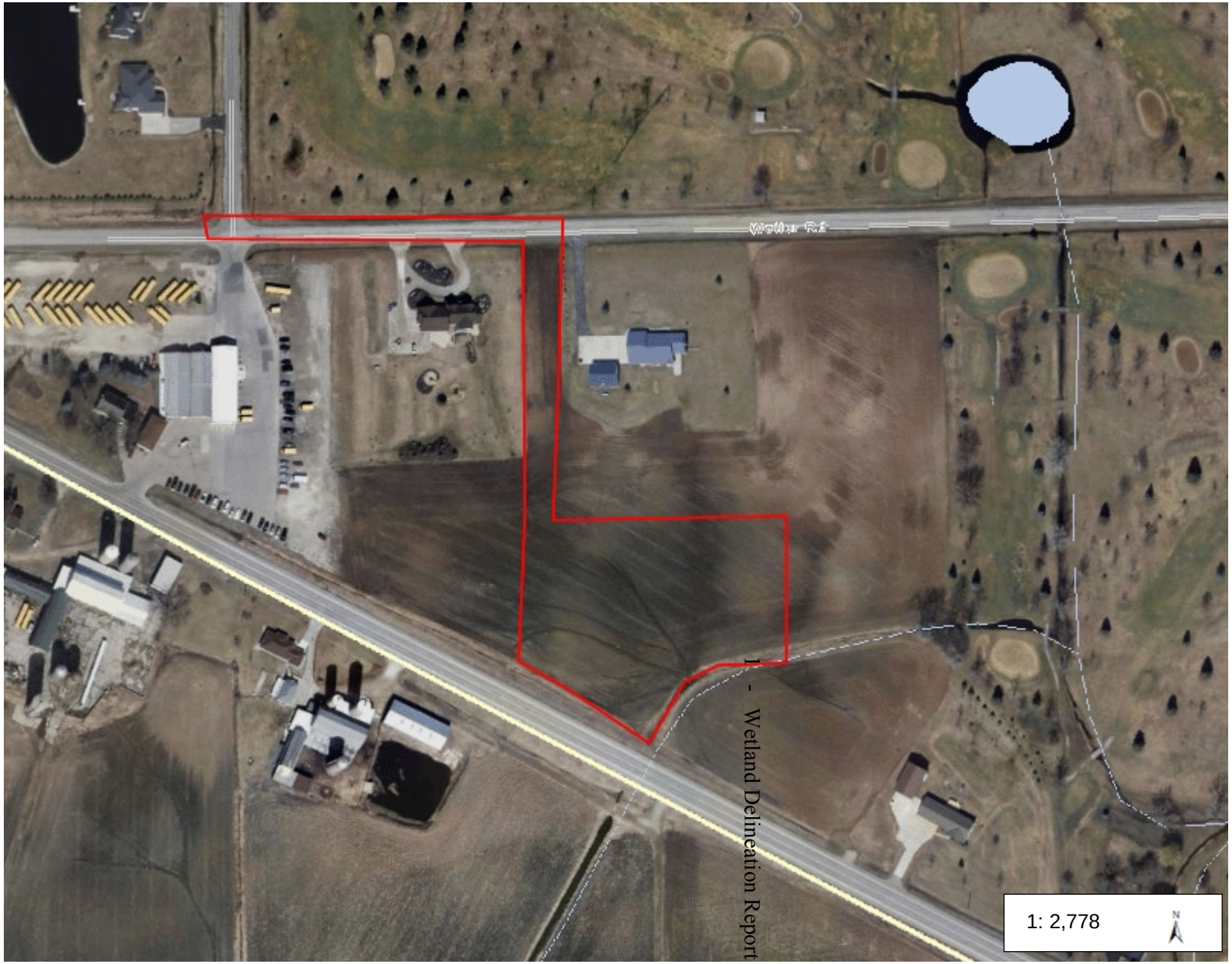
DESIGNED	DRAWN
AWS	AWS

PROJECT NO.
K0006–940668

DATE
MAY, 2015

SHEET NO.
03

Kavanaugh Pond - Aerial Photo Map



Legend

- Rivers and Streams
- Open Water
- 2010 Air Photos (WROC)

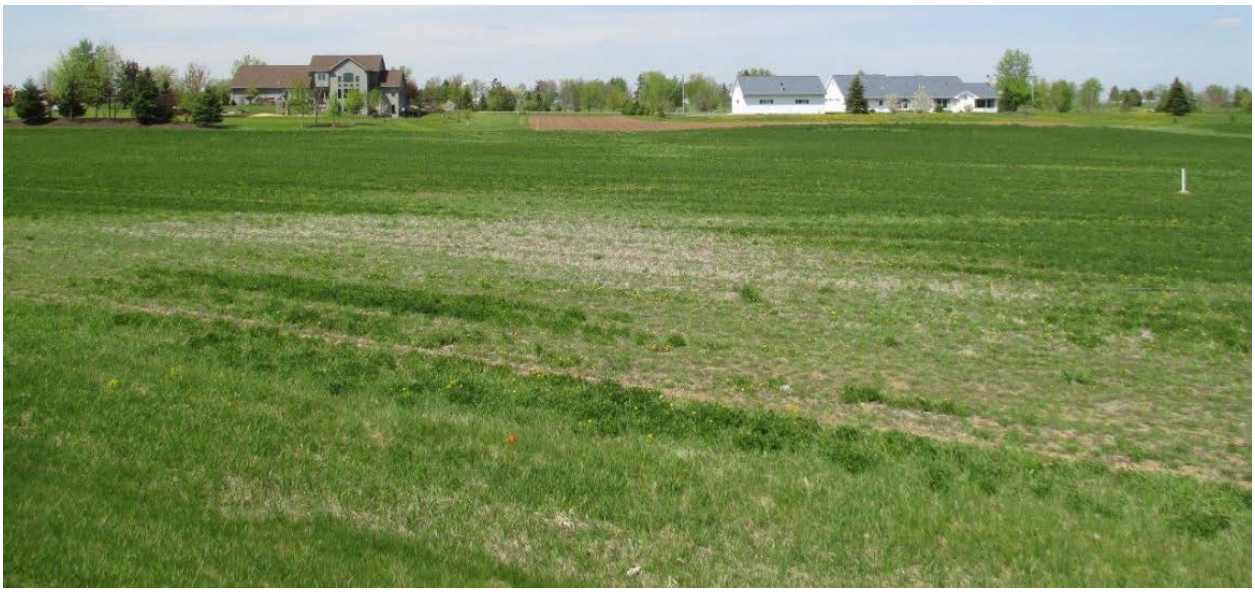
Notes

Surface Water Data Viewer Map
Plot Date: May 6,2015

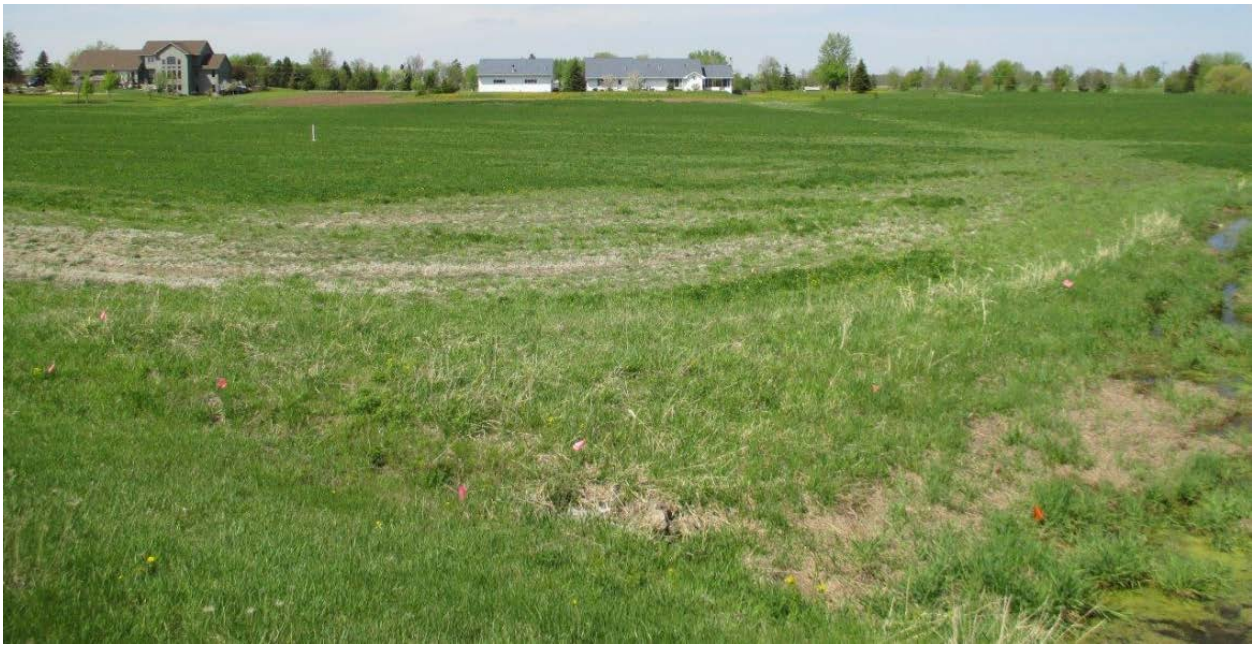
0.1 0 0.04 0.1 Miles

NAD_1983_HARN_Wisconsin_TM

Pre-Construction Site Conditions

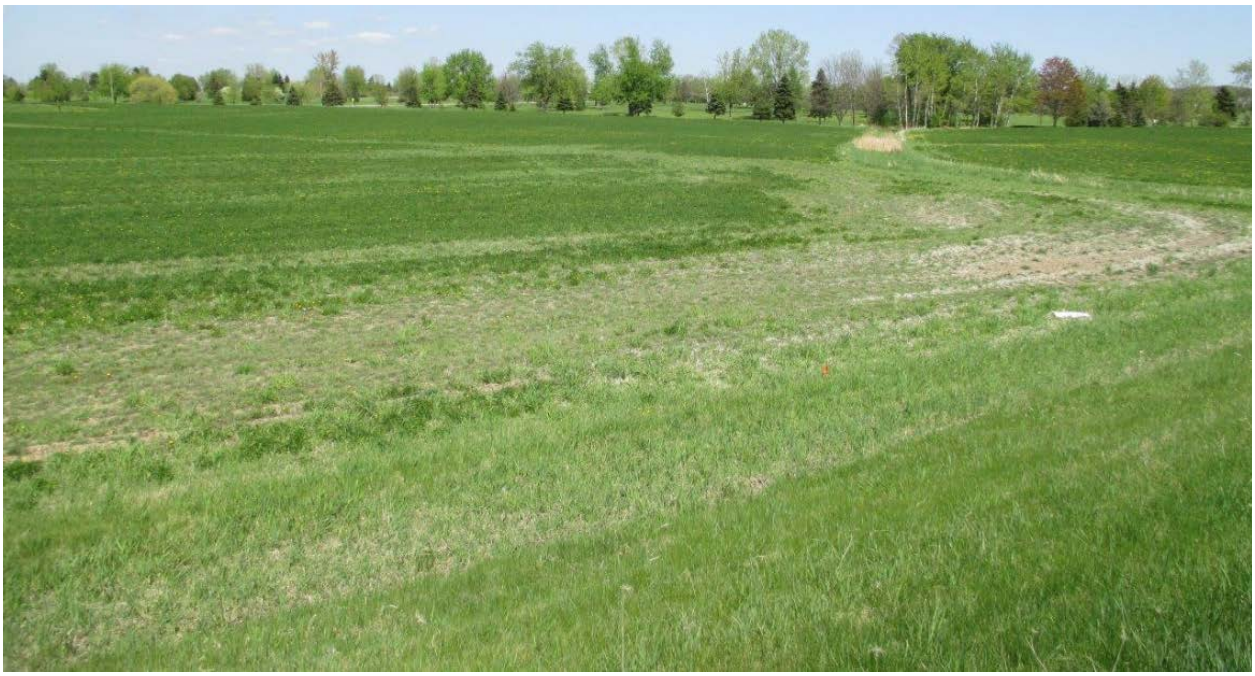


05/13/15

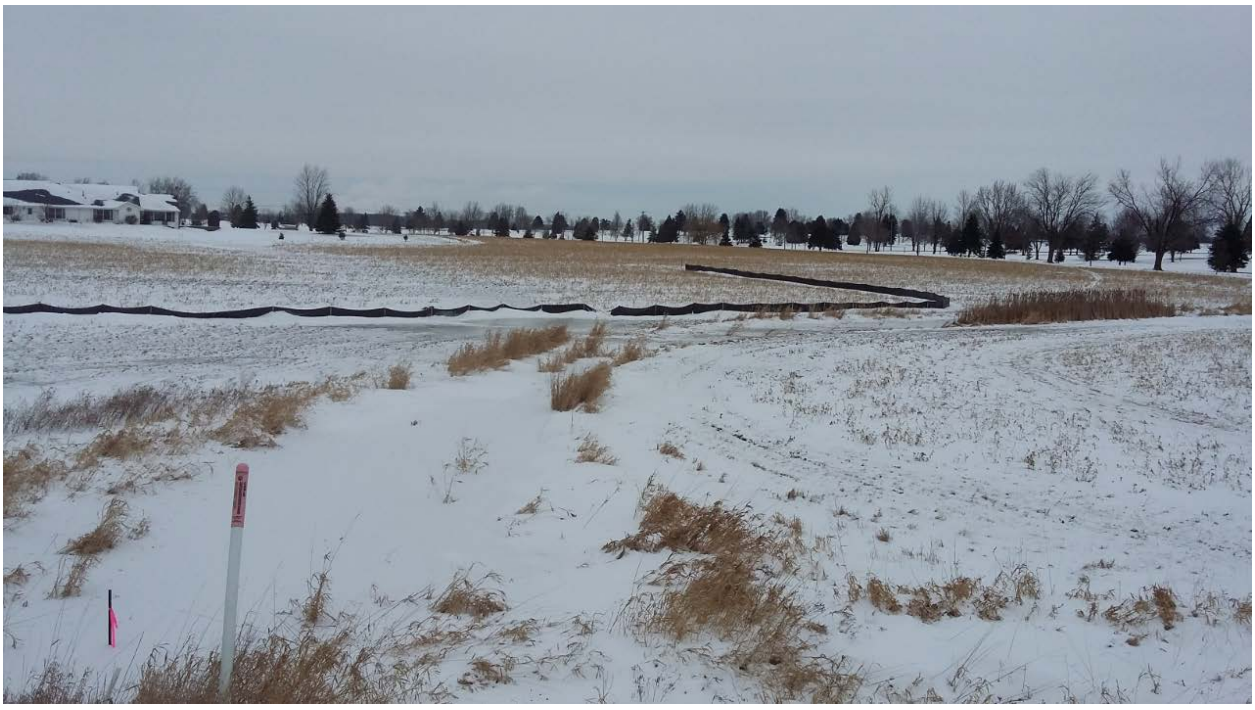


05/13/15

Pre-Construction Site Conditions

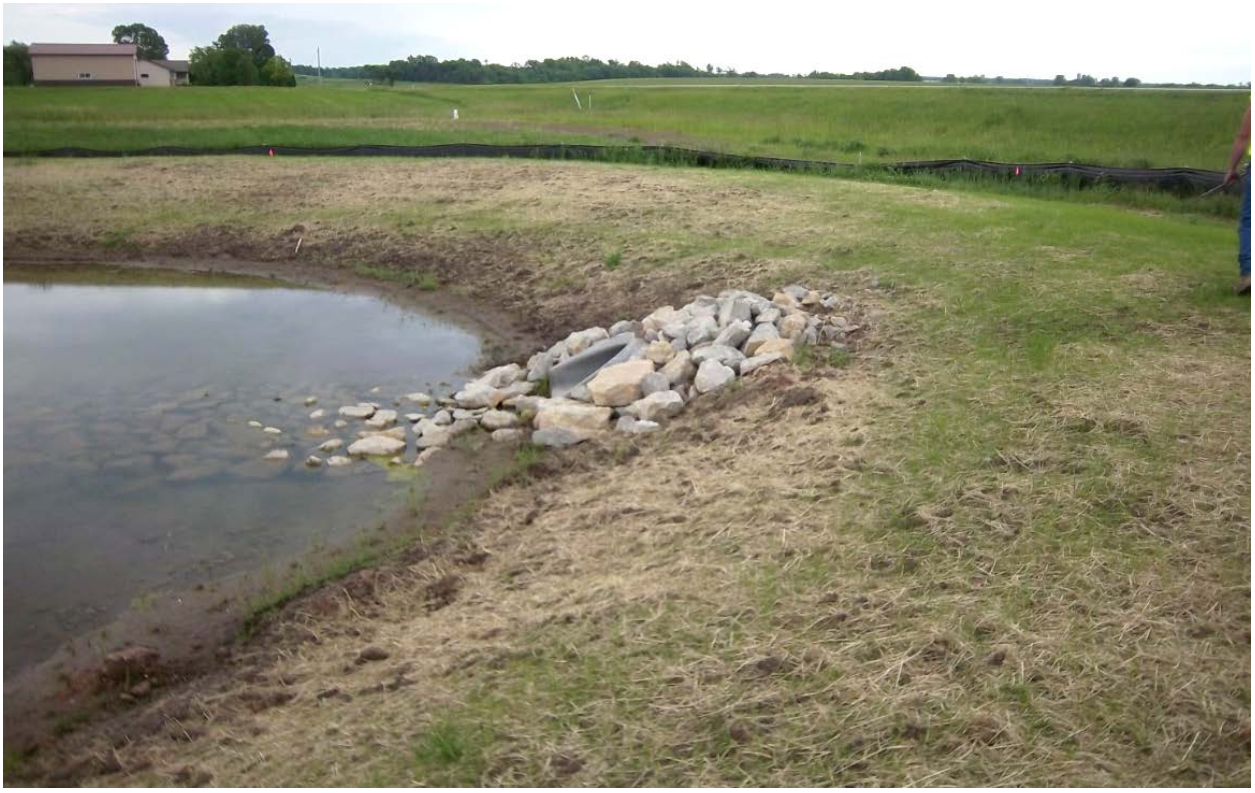


05/13/15

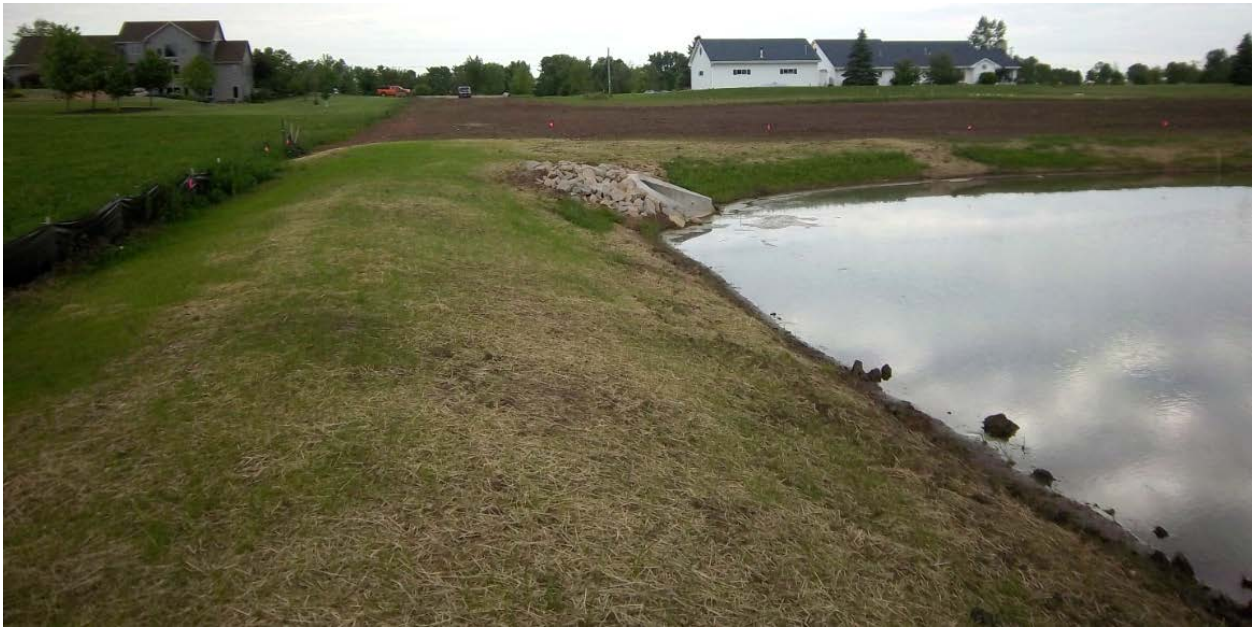


01/13/16

Post Construction Site Photos

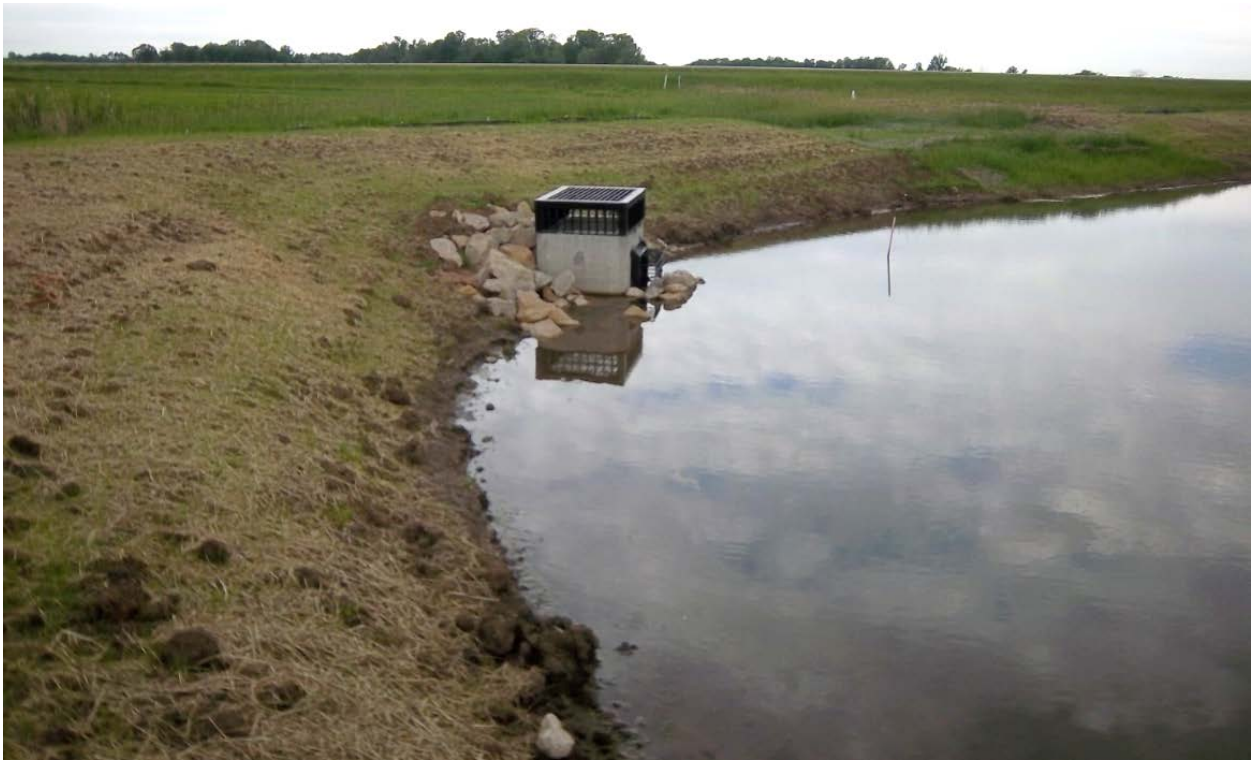


06/10/16

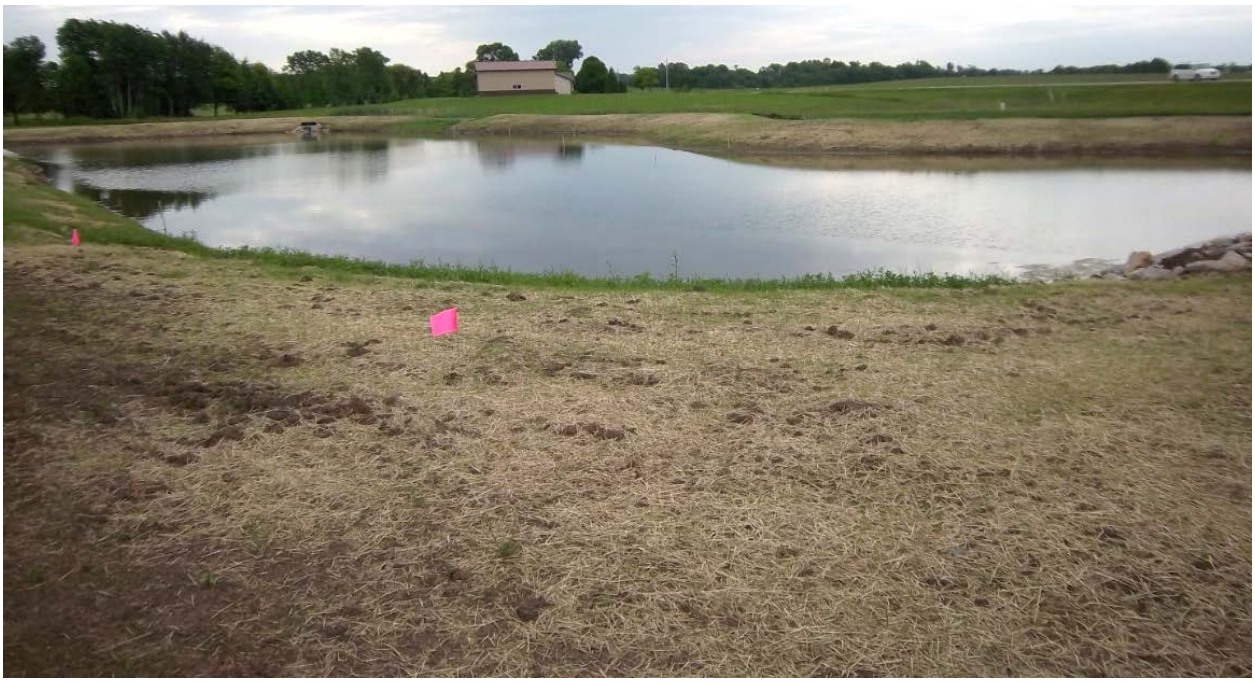


06/10/16

Post Construction Site Photos



06/10/16



06/10/16

Post Construction Site Photos

06/10/16

Data file name: W:\PROJECTS\K0006\940668\08 Design\SLAMM\Kavanaugh Pond.mdb
WinSLAMM Version 10.1.6
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Green Bay WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/02/69 Study period ending date: 12/28/69
Start of Winter Season: 11/25 End of Winter Season: 03/29
Date: 07-21-2015 Time: 14:27:33
Site information:

LU# 1 - Residential: Medium Density Res. No Alleys Total area (ac): 14.384
3 - Roofs 3: 0.647 ac. Pitched Connected Connected
8 - Roofs 8: 1.510 ac. Pitched Disconnected Normal Clayey Medium/High Density No Alleys
13 - Paved Parking 1: 0.029 ac. Connected Connected
25 - Driveways 1: 0.806 ac. Connected Connected
28 - Driveways 4: 0.273 ac. Disconnected Normal Clayey Medium/High Density No Alleys
31 - Sidewalks 1: 0.158 ac. Connected Connected
34 - Sidewalks 4: 0.158 ac. Disconnected Normal Clayey Medium/High Density No Alleys
37 - Streets 1: 0.532 ac. Smooth Street Length = 0.28768 curb-mi Street Width (assuming two curb-mi per street mile) = 30.525 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs
38 - Streets 2: 1.093 ac. Intermediate Street Length = 0.57536 curb-mi Street Width (assuming two curb-mi per street mile) = 31.35 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs
39 - Streets 3: 0.216 ac. Rough Street Length = 0.115072 curb-mi Street Width (assuming two curb-mi per street mile) = 30.9375 ft
Default St. Dirt Accum. Annual Winter Load = 2750 lbs
47 - Large Landscaped Areas 3: 0.029 ac. Normal Clayey
53 - Small Landscaped Areas 3: 8.271 ac. Normal Clayey
59 - Undeveloped Areas 3: 0.058 ac. Normal Clayey
69 - Isolated Areas: 0.029 ac. Normal Clayey
73 - Other Pervious Areas 3: 0.575 ac. Normal Clayey

LU# 2 - Industrial: Light Industrial Total area (ac): 4.625
1 - Roofs 1: 0.949 ac. Flat Connected Connected
3 - Roofs 3: 0.119 ac. Pitched Connected Connected
7 - Roofs 7: 0.105 ac. Flat Disconnected Normal Clayey Low Density
13 - Paved Parking 1: 1.523 ac. Connected Connected
22 - Unpaved Parking 4: 0.293 ac. Disconnected Normal Clayey Low Density
25 - Driveways 1: 0.118 ac. Connected Connected
31 - Sidewalks 1: 0.059 ac. Connected Connected
37 - Streets 1: 0.085 ac. Smooth Street Length = 0.0393125 curb-mi

Street Width (assuming two curb-mi per street mile) = 35.71765 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs
38 - Streets 2: 0.401 ac. Intermediate Street Length = 0.189625 curb-mi
Street Width (assuming two curb-mi per street mile) = 34.93171 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs
39 - Streets 3: 0.015 ac. Rough Street Length = 6.937501E-03 curb-mi
Street Width (assuming two curb-mi per street mile) = 35.2 ft
Default St. Dirt Accum. Annual Winter Load = 2750 lbs
47 - Large Landscaped Areas 3: 0.162 ac. Normal Clayey Low Density
53 - Small Landscaped Areas 3: 0.456 ac. Normal Clayey Low Density
59 - Undeveloped Areas 3: 0.201 ac. Normal Clayey Low Density
73 - Other Pervious Areas 3: 0.128 ac. Normal Clayey Low Density
80 - Other Part Con Imp Areas 3: 0.010 ac. Disconnected Normal Clayey Low Density

LU# 3 - Other Urban: Grass-Water Total area (ac): 4.147
51 - Small Landscaped Areas 1: 2.370 ac. Normal Clayey Low Density
70 - Water Body Areas: 1.777 ac. Low Density

LU# 4 - Other Urban: Parks Total area (ac): 2.018
1 - Roofs 1: 0.002 ac. Flat Connected Connected
3 - Roofs 3: 0.002 ac. Pitched Connected Connected
8 - Roofs 8: 0.005 ac. Pitched Disconnected Normal Clayey Low Density
13 - Paved Parking 1: 0.085 ac. Connected Connected
22 - Unpaved Parking 4: 0.004 ac. Disconnected Normal Clayey Low Density
25 - Driveways 1: 0.024 ac. Connected Connected
31 - Sidewalks 1: 0.010 ac. Connected Connected
37 - Streets 1: 0.020 ac. Smooth Street Length = 0.0125116 curb-mi
Street Width (assuming two curb-mi per street mile) = 26.6129 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs
38 - Streets 2: 0.046 ac. Intermediate Street Length = 0.0278484 curb-mi
Street Width (assuming two curb-mi per street mile) = 27.1413 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs
47 - Large Landscaped Areas 3: 1.573 ac. Normal Clayey Low Density
53 - Small Landscaped Areas 3: 0.017 ac. Normal Clayey
63 - Paved Playgrounds 1: 0.018 ac. Connected Connected
66 - Paved Playgrounds 4: 0.018 ac. Disconnected Normal Clayey Low Density
69 - Isolated Areas: 0.143 ac. Low Density
80 - Other Part Con Imp Areas 3: 0.050 ac. Disconnected Normal Clayey Low Density

LU# 5 - Residential: Low Density Residential Total area (ac): 12.400
3 - Roofs 3: 0.236 ac. Pitched Connected Connected
8 - Roofs 8: 0.756 ac. Pitched Disconnected Normal Clayey Low Density
13 - Paved Parking 1: 0.012 ac. Connected Connected
25 - Driveways 1: 0.397 ac. Connected Connected
28 - Driveways 4: 0.161 ac. Disconnected Normal Clayey Low Density
31 - Sidewalks 1: 0.043 ac. Connected Connected
34 - Sidewalks 4: 0.043 ac. Disconnected Normal Clayey Low Density
37 - Streets 1: 0.273 ac. Smooth Street Length = 0.1736 curb-mi
Street Width (assuming two curb-mi per street mile) = 25.92857 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs
38 - Streets 2: 0.521 ac. Intermediate Street Length = 0.3348 curb-mi
Street Width (assuming two curb-mi per street mile) = 25.66667 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs
39 - Streets 3: 0.074 ac. Rough Street Length = 0.0496 curb-mi Street

Width (assuming two curb-mi per street mile) = 24.75 ft
Default St. Dirt Accum. Annual Winter Load = 2750 lbs
53 - Small Landscaped Areas 3: 9.275 ac. Normal Clayey
59 - Undeveloped Areas 3: 0.546 ac. Normal Clayey
69 - Isolated Areas: 0.025 ac. Normal Clayey
73 - Other Pervious Areas 3: 0.025 ac. Normal Clayey
80 - Other Part Con Imp Areas 3: 0.012 ac. Disconnected Normal Clayey Low Density

LU# 6 - Residential: Suburban Residential Total area (ac): 3.143
8 - Roofs 8: 0.082 ac. Pitched Disconnected Normal Clayey Low Density
16 - Paved Parking 4: 0.003 ac. Disconnected Normal Clayey Low Density
25 - Driveways 1: 0.050 ac. Connected Connected
28 - Driveways 4: 0.038 ac. Disconnected Normal Clayey Low Density
34 - Sidewalks 4: 0.003 ac. Disconnected Normal Clayey Low Density
37 - Streets 1: 0.022 ac. Smooth Street Length = 0.012572 curb-mi Street Width (assuming two curb-mi per street mile) = 28.875 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs
38 - Streets 2: 0.104 ac. Intermediate Street Length = 6.600299E-02 curb-mi Street Width (assuming two curb-mi per street mile) = 25.92857 ft
Default St. Dirt Accum. Annual Winter Load = 2500 lbs
53 - Small Landscaped Areas 3: 2.665 ac. Normal Clayey
59 - Undeveloped Areas 3: 0.173 ac. Normal Clayey
69 - Isolated Areas: 0.003 ac. Normal Clayey

LU# 7 - Freeway: Rural Road ADT100 Total area (ac): 0.473
1 - Paved Lane/Shlder Area 1: 0.173 ac. Fair/Mod Slope C&G Freeway Length = 0.0650375 mi Freeway Width (assuming two curb-mi per freeway mile) = 44.004 ft
ADT = 100 veh/day Default Initial St. Dirt Loading
21 - Large Turf Areas 3: 0.229 ac. Normal Clayey
28 - Other Direct Con Imp Areas: 0.071 ac. Connected Connected

LU# 8 - Freeway: Highway Rural 2 Lane 100 ROW ADT6000 Total area (ac): 0.654
1 - Paved Lane/Shlder Area 1: 0.235 ac. Fair/Mod Slope C&G Freeway Length = 0.053955 mi Freeway Width (assuming two curb-mi per freeway mile) = 72 ft
ADT = 6000 veh/day Default Initial St. Dirt Loading
21 - Large Turf Areas 3: 0.314 ac. Normal Clayey
28 - Other Direct Con Imp Areas: 0.105 ac. Connected Connected

Control Practice 1: Wet Detention Pond CP# 1 (DS) - DS Wet Pond # 1
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 8.75
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Sharp Crested Weir
1. Sharp crested weir length (ft): 7
2. Sharp crested weir height from invert: 4.5
3. Sharp crested weir invert elevation above datum (ft): 10.5
Outlet type: Orifice 1
1. Orifice diameter (ft): 0.5
2. Number of orifices: 1

3. Invert elevation above datum (ft): 8.75

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 10
2. Weir crest width (ft): 10
3. Height of weir opening (cfs): 0.5
4. Height from datum to bottom of weir opening: 11.6

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0001	0.00	0.00
2	0.75	0.1700	0.00	0.00
3	7.75	0.5100	0.00	0.00
4	8.75	0.7900	0.00	0.00
5	9.00	0.8000	0.00	0.00
6	10.00	0.8600	0.00	0.00
7	11.00	0.9200	0.00	0.00
8	12.00	0.9900	0.00	0.00
9	13.00	1.0500	0.00	0.00
10	15.00	1.1800	0.00	0.00

SLAMM for Windows Version 10.1.6

Data file name: W:\PROJECTS\K0006\940668\08 Design\SLAMM\Kavanaugh Pond.mdb
Data file description:
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Green Bay WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Start of Winter Season: 11/25 End of Winter Season: 03/29
Model Run Start Date: 01/02/69 Model Run End Date: 12/28/69
Date of run: 07-21-2015 Time of run: 14:28:32
Total Area Modeled (acres): 41.844
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	892806	-	149.9	8353	-
Outfall Total with Controls:	887331	0.61%	23.56	1305	84.38%
Annualized Total After Outfall Controls:	899655			1323	

Pollutant	Concentration - No Controls	Pollutant Yield No Controls	Concentration - With Controls	Pol. Yield With Controls	Percent Reduction	Conc. Units	No
Particulate Solids	149.9	8353	23.56	1305	84.38 %	mg/L	
Total Phosphorus	0.5387	30.03	0.2212	12.25	59.20 %	mg/L	
		lbs		lbs			