



2009

Rec 7-12-10

Village of Menomonee Falls
W156 N8480 Pilgrim Road
Menomonee Falls, WI 53051-3140
Telephone: (262) 532-4200

STORMWATER MANAGEMENT FACILITIES OPERATION AND INSPECTION REPORT

Quarter Section SE 4 Name of Business/Subdivision Christman Crossing
Property Tax ID Number MNFV0016280 Address of Property W177 N8848 St. Thomas Dr.
Menomonee Falls, WI

Dry Pond	☒
Wet Pond	☐
Other	☐

Description: 45001 Location Of Pond Outlot 1
Triangular - Shaped Christman Crossing Subd.
Pond w/ Cattails @ Bottom SE 4, T8N, R20E

Year Pond Constructed 2004 Year of Last Certification unknown

Compliance Verification	Design	Actual	Compliant Yes No		Comments (Condition of Structure)
Primary Outlet Pipe					
Opening Diameter	18"	18"	✓		good condition concrete pipe
Upstream Invert	876	874.84	✓		
Downstream Invert	874.52	874.36	✓		
Length	95'	95'	✓		
Slope	.5%	.5%	✓		
Secondary Outlet Pipe					
	(If Applicable)				
Opening Diameter					
Upstream Invert					
Downstream Invert					
Length					
Slope					
Riser					
	(If Applicable)				
Opening Diameter	1.00'	2.17'			opening dia. changed by city cover and opening in good condition
Elevation	883.0	880.06			
change in elevation by city no blockage of opening					
Upper Discharge Control					
	(If Applicable)				
Opening Diameter	0.42'	0.50'	✓		change in final ori face sub- sequent to design concrete structure in good condition/no blockage
Elevation	878.5	878.43	✓		

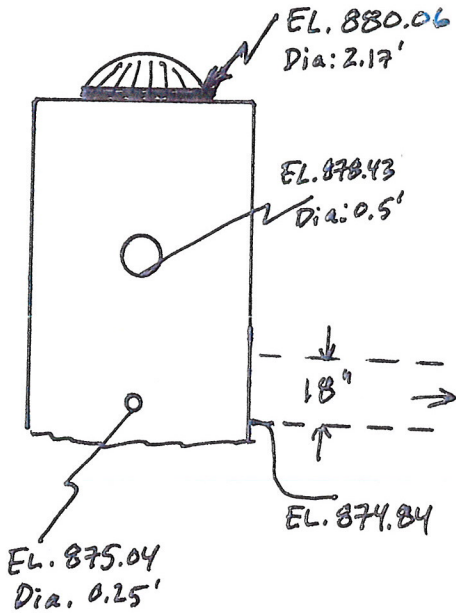
Compliance Verification	Design	Actual	Compliant Yes No		Comments	
Lower Discharge Control	(If Applicable)					
Opening Diameter	0.25'	0.25'	✓		concrete structure in good condition w/ no blockage of orifice	
Elevation	875.0	875.04	✓			
Other (Description)						
Opening Type	NA	NA				
Elevation	NA	NA				
Emergency Spillway						
Elevation	883.0	883.74				
Length of spillway	10'	9.8'	✓		no rip-rap or overgrown w/ vegetation some minor area of no vegetation see photo.	
Embankment			Present Yes No			
Unauthorized plantings, trees, or woody vegetation				✓	Some erosion of vegetation in the northwest corner of slope, see photo.	
Animal burrows or slope erosion			✓		remainder of pond in good shape.	
Storage Properties	Design	Actual	Compliant Yes No		Points Surveyed	Equipment Used
Normal Water Elevation (Wet Ponds)	NA	NA				
Design High Water Elevation	882.59	881.44	✓			
Area at Normal Water Elevation (Ac) (Wet Ponds)	NA	NA				
Area at Design High Water Elevation (Ac)	0.35					
Active Storage Available (Ac-Ft)*	1.07	1.43				see attached calculations
Lowest Elevation at Top of Embankment (If Applicable)	885	884.37				
Average Elevation at Top of Embankment (If Applicable)	NA	NA				
Maximum Bottom Elevation	875	874.29				
Average Pond Bottom Elevation	875	875				
Pond Bottom Area (Ac)	0.03					
Maximum Pond Depth	9	9.71				
Average Pond Depth	9	9.5				

*To Determine Active Storage $V = H/3(A1 + A2 + (A1 \times A2)^{1/2})$

Wet Ponds Use H = Height of Section, $A1$ = area at normal water elevation, $A2$ = area at top section

Dry Ponds Use H = Height of Section, $A1$ = pond bottom area, $A2$ = area at top section

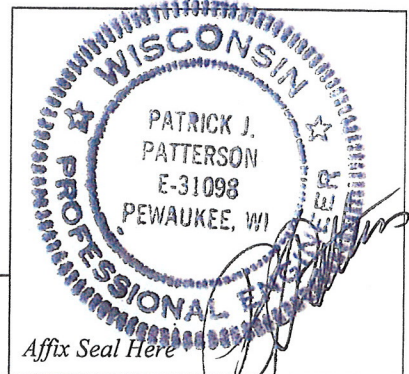
Sketch Outlet



Place Photograph of Pond

Inspection Firm: Midwest Engineering Services Inspector Name: Pat Patterson
Phone Number: 262 521 2125 Inspection Date: 6-15-10
Address: 821 Corporate Ct, Ste 102
Waukegan, WI

Certifying
Professional Name: Patrick J. Patterson
Phone Number: 262 521 2125



Date:

6-30-10

Signature:

Affix Seal Here



1. Photograph shows erosion observed along the northwestern portion of the pond. Lesser erosion observed along south west slope of pond and in east section of section. Minor erosion or vegetation overgrowth in area of weir.



2. Photograph taken from southeast corner of top of pond, facing to the west. Photo shows outlet structure on left side of photo and erosion on right side of photo. Cattails in the bottom of pond.



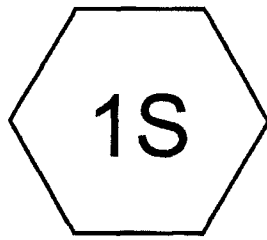
3. Photograph shows inlet structure observed along the central portion of the western slope of the pond. Some soil deposits and debris at end of structure.

SITE PHOTOGRAPHS

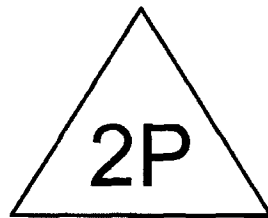
Christman Crossing Subdivision
Dry Pond
Menomonee Falls, WI

Project Number:7-103048

Initials:



Area A



Outlot 1



Drainage Diagram for Christman Crossing

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Christman Crossing

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Christman Crossing

Type II 24-hr 100-YR Rainfall=6.95"

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Summary for Subcatchment 1S: Area A

Runoff = 22.47 cfs @ 12.18 hrs, Volume= 1.951 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR Rainfall=6.95"

Area (ac)	CN	Description
* 4.700	83	Post Developed
4.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.9					Direct Entry,

Christman Crossing

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Christman Crossing

Type II 24-hr 100-YR Rainfall=6.95"

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Summary for Pond 2P: Outlot 1

Inflow Area = 4.700 ac, 0.00% Impervious, Inflow Depth = 4.98" for 100-YR event
 Inflow = 22.47 cfs @ 12.18 hrs, Volume= 1.951 af
 Outflow = 8.81 cfs @ 12.51 hrs, Volume= 1.949 af, Atten= 61%, Lag= 20.0 min
 Primary = 8.81 cfs @ 12.51 hrs, Volume= 1.949 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 3
 Peak Elev= 881.44' @ 12.51 hrs Surf.Area= 10,233 sf Storage= 33,457 cf

Plug-Flow detention time= 173.8 min calculated for 1.949 af (100% of inflow)
 Center-of-Mass det. time= 173.0 min (988.1 - 815.1)

Volume	Invert	Avail.Storage	Storage Description
#1	875.00'	66,050 cf	Custom Stage Data (Prismatic) listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
875.00	1,220	0	0
876.00	2,140	1,680	1,680
877.00	3,340	2,740	4,420
878.00	4,620	3,980	8,400
879.00	6,100	5,360	13,760
880.00	7,600	6,850	20,610
881.00	9,400	8,500	29,110
882.00	11,280	10,340	39,450
883.00	13,240	12,260	51,710
884.00	15,440	14,340	66,050

Device	Routing	Invert	Outlet Devices
#1	Primary	874.84'	18.0" Round Culvert L= 95.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 874.84' / 874.36' S= 0.0051 ' S Cc= 0.900 n= 0.013
#2	Device 1	875.04'	3.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Device 1	878.43'	6.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	880.06'	13.0" x 13.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#5	Secondary	883.74'	9.8' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Primary OutFlow Max=8.81 cfs @ 12.51 hrs HW=881.44' (Free Discharge)

- 1=Culvert (Passes 8.81 cfs of 19.55 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.60 cfs @ 12.18 fps)
- 3=Orifice/Grate (Orifice Controls 1.57 cfs @ 8.00 fps)
- 4=Orifice/Grate (Orifice Controls 6.64 cfs @ 5.66 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=875.00' (Free Discharge)

- 5=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Christman Crossing

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Christman Crossing

Type II 24-hr 2-YR Rainfall=2.84"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Area A

Runoff Area=4.700 ac 0.00% Impervious Runoff Depth=1.32"

Tc=24.9 min CN=83 Runoff=5.97 cfs 0.517 af

Pond 2P: Outlot 1

Peak Elev=878.61' Storage=11,476 cf Inflow=5.97 cfs 0.517 af

Primary=0.54 cfs 0.515 af Secondary=0.00 cfs 0.000 af Outflow=0.54 cfs 0.515 af

Total Runoff Area = 4.700 ac Runoff Volume = 0.517 af Average Runoff Depth = 1.32"
100.00% Pervious = 4.700 ac 0.00% Impervious = 0.000 ac

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Christman Crossing

Type II 24-hr 10-YR Rainfall=4.57"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: AreaA

Runoff Area=4.700 ac 0.00% Impervious Runoff Depth=2.79"

Tc=24.9 min CN=83 Runoff=12.73 cfs 1.092 af

Pond 2P: Outlot 1

Peak Elev=880.23' Storage=22,395 cf Inflow=12.73 cfs 1.092 af

Primary=2.70 cfs 1.091 af Secondary=0.00 cfs 0.000 af Outflow=2.70 cfs 1.091 af

Total Runoff Area = 4.700 ac Runoff Volume = 1.092 af Average Runoff Depth = 2.79"
100.00% Pervious = 4.700 ac 0.00% Impervious = 0.000 ac

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Christman Crossing

Type II 24-hr 100-YR Rainfall=6.95"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: AreaA

Runoff Area=4.700 ac 0.00% Impervious Runoff Depth=4.98"

Tc=24.9 min CN=83 Runoff=22.47 cfs 1.951 af

Pond 2P: Outlot 1

Peak Elev=881.44' Storage=33,457 cf Inflow=22.47 cfs 1.951 af

Primary=8.81 cfs 1.949 af Secondary=0.00 cfs 0.000 af Outflow=8.81 cfs 1.949 af

Total Runoff Area = 4.700 ac Runoff Volume = 1.951 af Average Runoff Depth = 4.98"
100.00% Pervious = 4.700 ac 0.00% Impervious = 0.000 ac