STORMWATER MANAGEMENT PLAN



Frame Park Commons City of Waukesha, Waukesha County, Wisconsin PEG Project Number: 1545.00-WI

Prepared for:



09/12/2019

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9/5/2019

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INTRODUCTION

The proposed Frame Park Commons development site is located in the City of Waukesha, Waukesha County, WI. A location map that illustrates the tract of land is included in **Appendix 1**.

This stormwater management plan has been designed to accommodate the two multifamily sites with the two proposed buildings and the supporting infrastructures including parking lots & drive lanes. The sites have been divided into two lots, the West and the East lot. Each site will include combining existing lots to create the overall lot boundary via the proposed certified survey map. The West lot consists of a 18,000 S.F. building with 52 units, and the East lot a 15,000 S.F. building with 20 units.

DESIGN CRITERIA

Wisconsin Department of Natural Resources:..... NR 216 & NR 151.12

<u>Water Quality</u>: Removal of 40% of the annual total suspended solids (TSS) load for onsite areas.

<u>Water Quantity</u>: The Waukesha Municipal Code dictates that the 1-yr, 2-yr, 10-yr & 100-yr, 24-hr post-development runoff rates shall not exceed the 1-yr, 2-yr, 10-yr & 100-yr, 24-hr predevelopment runoff rate.

Infiltration: The project site has been deemed to be exempt from requirements as it is a redevelopment.

ANALYSIS METHODS

HydroCAD[®] (Version 10.00) software has been used to analyze stormwater characteristics for this stormwater management plan. HydroCAD uses the accepted TR-55 methodology for determining peak discharge runoff rates. Existing ground cover Curve Numbers were selected from the Waukesha Municipal Code, Section 32.11. The Code of Ordinances Performance Standards specifies a maximum grassland curve number of 78.

Stormwater modeling was conducted using 1-yr, 2-yr, 10-yr, and 100-year storm events with respective rainfall amounts of 2.40, 2.70, 3.81, and 6.18 inches in accordance with Chapter 32, Table 3 of the Waukesha Municipal Code.

TSS reduction characteristics for the proposed water quality facilities were determined using WinSLAMM[®] (Version 10.4) Source Loading and Management Model.

PRE-DEVELOPMENT CONDITIONS

The existing site comprises of a single proposed West lot & an East lot. Each site will include combining existing lots to create the overall lot boundary via the proposed certified survey map.

The West Lot contains multiple existing buildings, parking lot areas and grassland. The site generally slopes from to east to west. The western edge of the site drains onto an extended 2:1 slope down to a depression and eventually overtopping into East Moreland Boulevard and getting into the public storm sewer. A contributing watershed map and supporting hydrologic modeling output for the existing conditions is located in **Appendix 2**.

The East lot contains multiple parking lot areas and grassland. The site is divided into a Northern & Southern drainage area. The northern area sheet flows to White Rock Avenue and gets into the public storm sewer. The southern area has a storm sewer system that is connected directly to the public storm sewer into Niagara Street. A contributing watershed map and supporting hydrologic modeling output for the existing conditions is located in **Appendix 2**.

POST-DEVELOPMENT CONDITIONS

The onsite areas are based on the total disturbed areas from the proposed design at both sites. A contributing watershed map and supporting hydrologic modeling output for the proposed conditions is located in **Appendix 3**.

Peak Runoff Rate Attenuation, Water Quality & Infiltration - West Lot

Design post-development release rates for the proposed project have been calculated based on the output of the existing conditions Hydrologic Modeling. Stormwater runoff peak rates will be controlled through the usage of a ADS Stormtech MC-4500 chamber system. The underground chamber system has been situated to collect the onsite storm sewer outfalls and overland relief routing. Post development peak runoff rate attenuation will be achieved through the outlet control device and available storm water detention volume provided by the underground chamber system.

Design post-development release rates for the proposed development have been computed for the proposed watershed. Presentation of pertinent values from the modeling is contained within the following tables:

PRE-DEVELOPMENT (EXISTING WEST LOT) SUMMARY

Node	Area (ac)	CN	Tc (min)	1-year Peak	2-year Peak	10-year Peak	100-year Peak
E1	0.419	91	6	1.12 cfs	1.31 cfs	2.02 cfs	3.52 cfs
E2	0.812	91	6	2.17 cfs	2.54 cfs	3.91 cfs	6.81 cfs
TOTAL*	1.23	N/A	N/A	1.89 cfs*	2.71 cfs*	5.03 cfs*	9.01 cfs*

*TOTAL INCLUDES REDUCTION FROM PEAKS DUE TO DEPRESSION BUILD UP

POST-DEVELOPMENT (PROPOSED WEST LOT) SUMMARY

Node	Area (ac)	CN	Tc (min)	1-year Peak	2-year Peak	10-year Peak	100-year Peak
A1 (COMPOSITE)	1.07	95	6	3.34 cfs	3.82 cfs	5.59 cfs	9.33 cfs
A2 (UNDETAINED)	0.16	84	6	0.31 cfs	0.37 cfs	0.64 cfs	1.23 cfs
PR (DISCHARGE)	1.23	N/A	N/A	1.88 cfs	2.48 cfs	4.44 cfs	8.91 cfs

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COMPARISON OF PROPOSED TO ALLOWABLE PEAK FLOWS

Disch	arge Point	Peak Flow 1-year (cfs)	Peak Flow 2-year (cfs)	Peak Flow 10-year (cfs)	Peak Flow 100-year (cfs)
	PROPOSED*	1.88	2.48	4.44	8.91
CHAMBER	ALLOWABLE	1.89	2.71	5.03	9.01
	MEETS CODE (?)	YES	YES	YES	YES

*The proposed models for the storm events can be found in **Appendix 3**. Post-Development release rates are taken from Proposed West Building in the HydroCAD summary results

Runoff Water Quality

Post-development water quality will be obtained within the underground chamber system isolator row and an Up-Flo filter. Most of the impervious surfaces will be captured and conveyed into the chamber system per the current civil design. The primary conveyance will be accomplished through the onsite storm sewer. Undetained areas have also been included in the total calculations as they will not be treated.

WinSLAMM modeling indicates that the chamber system and the Up-Flo filter will remove 47.4% TSS prior to runoff leaving the site, as compared to the required removal of 40.0%. Refer to **Appendix 4** for WinSLAMM modeling input/output summaries.

Stormwater Infiltration

Stormwater Infiltration has not been incorporated into this storm water management plan due to the site being classified as redevelopment, and redevelopment sites are exempt from NR 151 infiltration requirements.

Peak Runoff Rate Attenuation, Water Quality & Infiltration - East Lot

Design post-development release rates for the proposed project have been calculated based on the output of the existing conditions Hydrologic Modeling. Stormwater runoff peak rates will be controlled through the usage of a dry detention pond. The pond has been situated to collect the onsite storm sewer outfalls and overland relief routing. Post development peak runoff rate attenuation will be achieved through the outlet control device and available storm water detention volume provided by the pond.

Design post-development release rates for the proposed development have been computed for the proposed watershed. Presentation of pertinent values from the modeling is contained within the following tables:

PRE-DEVELOPMENT (EXISTING EAST LOT) SUMMARY

Node	Area (ac)	CN	Tc (min)	1-year Peak	2-year Peak	10-year Peak	100-year Peak
E3	0.407	84	6	0.64 cfs	0.79 cfs	1.36 cfs	2.63 cfs
E4	0.703	91	6	1.60 cfs	1.88 cfs	2.92 cfs	5.10 cfs
TOTAL	1.11	N/A	N/A	2.24 cfs	2.66 cfs	4.27 cfs	7.73 cfs

POST-DEVELOPMENT (PROPOSED EAST LOT) SUMMARY

Node	Area (ac)	CN	Tc (min)	1-year Peak	2-year Peak	10-year Peak	100-year Peak
A3 (COMPOSITE)	1.11	90	6	2.86 cfs	3.37 cfs	5.26 cfs	9.29 cfs
PR (DISCHARGE)	1.11	N/A	N/A	1.60 cfs	1.76 cfs	2.25 cfs	4.79 cfs

COMPARISON OF PROPOSED TO ALLOWABLE PEAK FLOWS

Dis	charge Point	Peak Flow 1-year (cfs)	Peak Flow 2-year (cfs)	Peak Flow 10-year (cfs)	Peak Flow 100-year (cfs)
POND	PROPOSED*	1.60	1.76	2.25	4.79
	ALLOWABLE	1.60	1.88	2.92	5.10
	MEETS CODE (?)	YES	YES	YES	YES

*The proposed models for the storm events can be found in **Appendix 3**. Post-Development release rates are taken from Proposed East Building in the HydroCAD summary results.

Runoff Water Quality

Post-development water quality will be obtained by an Up-Flo filter. The impervious surfaces will be captured and conveyed into the pond and through the Up-Flo filter per the current civil design. The primary conveyance will be accomplished through the onsite storm sewer.

WinSLAMM modeling indicates that the Up-Flo filter will remove 40.6% TSS prior to runoff leaving the site, as compared to the required removal of 40.0%. Refer to **Appendix 4** for WinSLAMM modeling input/output summaries.

Stormwater Infiltration

Stormwater Infiltration has not been incorporated into this storm water management plan due to the site being classified as redevelopment, and redevelopment sites are exempt from NR 151 infiltration requirements.

CONCLUSION

The stormwater management features for the Frame Park Commons development have been designed to comply with Waukesha Municipal Code and WDNR technical standards NR151 and NR216. Proposed runoff rates will be reduced as required to ensure downstream conveyance capacity. Storm water runoff from the development site will be treated to remove required total suspended solids annually through a chamber isolator row and 2 Up-Flo filters. It is believed the sites meet criteria set forth in WDNR NR 151 to be exempt from infiltration requirements; therefore, infiltration measures have not been included in this storm water management plan.

(Appendices Follow)











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Summary for Subcatchment E1: NORTH AREA

Runoff = 1.12 cfs @ 12.13 hrs, Volume= 0.053 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 1-YR Rainfall=2.40"

	Area (sf)	CN	Description			
*	6,227	78	>75% Gras	s cover, Go	ood, HSG D	
*	10,015	98	Paved park	ing, HSG D)	
*	2,025	98	Roof - Old I	Bldg		
	18,267 6,227 12,040	91	Weighted A 34.09% Per 65.91% Imp	verage rvious Area pervious Are	ea	
- (mi	Tc Length n) (feet)	Slop (ft/f	e Velocity t) (ft/sec)	Capacity (cfs)	Description	
6	.0				Direct Entry, CONS	

Subcatchment E1: NORTH AREA



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Summary for Subcatchment E2: SOUTH AREA

Runoff = 2.17 cfs @ 12.13 hrs, Volume= 0.103 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 1-YR Rainfall=2.40"

	Area (sf)	CN	Description				
*	12,153	78	>75% Gras	s cover, Go	ood, HSG D		
*	4,404	98	Paved park	ing, HSG D)		
	2,486	98	Roofs, HSC	G D			
*	1,665	91	Gravel road	ls, HSG D			
*	14,683	98	Roof - Old I	Bldg			
	35,391	91	Weighted Average				
	13,818		39.04% Pe	rvious Area			
	21,573		60.96% Imp	pervious Are	ea		
٦	c Length	Slope	e Velocity	Capacity	Description		
(mii	n) (feet)	(ft/ft) (ft/sec)	(cfs)			
6	.0				Direct Entry, CONS		

Subcatchment E2: SOUTH AREA



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Summary for Pond D1: EXISTING DEPRESSION

Inflow Area	=	1.232 ac, 6	62.64% Impervious,	Inflow Depth = 1.	.52" for 1-YR event
Inflow	=	3.29 cfs @	12.13 hrs, Volume	= 0.156 af	
Outflow	=	1.89 cfs @	12.22 hrs, Volume	= 0.105 af	, Atten= 42%, Lag= 5.6 min
Primary	=	1.89 cfs @	12.22 hrs, Volume	= 0.105 af	

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs Peak Elev= 42.67' @ 12.22 hrs Surf.Area= 4,165 sf Storage= 2,905 cf

Plug-Flow detention time= 130.1 min calculated for 0.105 af (67% of inflow) Center-of-Mass det. time= 56.0 min (849.9 - 793.8)

Volume	Inv	ert Avail.St	torage Stora	age Description	
#1	41.	40' 4,	439 cf Cus	tom Stage Data (P	rismatic)Listed below (Recalc)
Elevatio	on et)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	e Cum.Store) (cubic-feet)	
41.4 42.0 43.0	40 00 00	566 2,103 5,174	0 801 3,639) 0 801 9 4,439	
Device	Routing	Inver	t Outlet Dev	/ices	
#1	Primary	42.50	' 10.0' long Head (fee Coef. (Eng	x 20.0' breadth E t) 0.20 0.40 0.60 glish) 2.68 2.70 2	Broad-Crested Rectangular Weir 0.80 1.00 1.20 1.40 1.60 .70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=1.78 cfs @ 12.22 hrs HW=42.66' (Free Discharge) **1=Broad-Crested Rectangular Weir** (Weir Controls 1.78 cfs @ 1.09 fps) Prepared by Microsoft HydroCAD® 10.00-22 s/n 07894 © 2018 HydroCAD Software Solutions LLC



Pond D1: EXISTING DEPRESSION

Summary for Link EX: TOTAL WEST

Inflow Area	a =	1.232 ac, 6	2.64% Impervious	Inflow Depth =	1.02	" for 1-YR event
Inflow	=	1.89 cfs @	12.22 hrs, Volum	e= 0.105	af	
Primary	=	1.89 cfs @	12.22 hrs, Volum	e= 0.105	af, A	tten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link EX: TOTAL WEST

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Summary for Subcatchment E1: NORTH AREA

Runoff = 1.31 cfs @ 12.13 hrs, Volume= 0.063 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 2-YR Rainfall=2.70"

	Area (sf)	CN	Description						
*	6,227	78	>75% Gras	>75% Grass cover, Good, HSG D					
*	10,015	98	Paved park	ing, HSG D)				
*	2,025	98	Roof - Old I	loof - Old Bldg					
	18,267 6,227 12,040	91	Weighted A 34.09% Per 65.91% Imp	verage rvious Area pervious Are	ea				
(mi	Tc Length in) (feet)	Slope (ft/ft	e Velocity (ft/sec)	Capacity (cfs)	Description				
6	6.0				Direct Entry, CONS				

Subcatchment E1: NORTH AREA



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Summary for Subcatchment E2: SOUTH AREA

Runoff = 2.54 cfs @ 12.13 hrs, Volume= 0.121 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 2-YR Rainfall=2.70"

	Area	(sf)	CN	Description						
*	12,	153	78	>75% Gras	•75% Grass cover, Good, HSG D					
*	4,4	404	98	Paved park	ing, HSG D	1				
	2,4	486	98	Roofs, HSC	loofs, HSG D					
*	1,0	665	91	Gravel road	ravel roads, HSG D					
*	14,0	683	98	Roof - Old E	Bldg					
	35,3 13,8 21,9	391 818 573	91	Weighted A 39.04% Per 60.96% Imp	verage vious Area pervious Are	ea				
(r	Tc Le nin) (ngth feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description				
	6.0					Direct Entry, CONS				

Subcatchment E2: SOUTH AREA



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Summary for Pond D1: EXISTING DEPRESSION

Inflow Area	=	1.232 ac, 6	62.64% Impe	ervious,	Inflow De	pth =	1.79"	for 2-YR	event
Inflow	=	3.85 cfs @	12.13 hrs,	Volume	=	0.184	af		
Outflow	=	2.71 cfs @	12.20 hrs,	Volume	=	0.133	af, Atte	n= 29%,	Lag= 4.4 min
Primary	=	2.71 cfs @	12.20 hrs,	Volume	=	0.133	af		-

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs Peak Elev= 42.72' @ 12.20 hrs Surf.Area= 4,305 sf Storage= 3,098 cf

Plug-Flow detention time= 117.1 min calculated for 0.133 af (72% of inflow) Center-of-Mass det. time= 47.5 min (838.0 - 790.5)

Volume	Inv	ert Avail.St	orage Stora	ge Description				
#1	41.	40' 4,	439 cf Custo	om Stage Data (P	rismatic)Listed below (Recalc)			
Elevatio	on et)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)				
41.4 42.0 43.0	40 00 00	566 2,103 5,174	0 801 3,639	0 801 4,439				
Device	Routing	Inver	t Outlet Devi	ces				
#1	Primary	42.50' 10.0 Hea Coe		' long x 20.0' breadth Broad-Crested Rectangular Weir Id (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 If. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63				

Primary OutFlow Max=2.68 cfs @ 12.20 hrs HW=42.72' (Free Discharge) **1=Broad-Crested Rectangular Weir** (Weir Controls 2.68 cfs @ 1.25 fps) Prepared by Microsoft HydroCAD® 10.00-22 s/n 07894 © 2018 HydroCAD Software Solutions LLC



Pond D1: EXISTING DEPRESSION

1545.00-WI EXISTING WEST BUILDINGMPrepared by MicrosoftMHydroCAD® 10.00-22s/n 07894© 2018 HydroCAD Software Solutions LLC

Summary for Link EX: TOTAL WEST

Inflow Are	a =	1.232 ac, 6	62.64% Impervious,	Inflow Depth = 1.2	29" for 2-YR event
Inflow	=	2.71 cfs @	12.20 hrs, Volume	= 0.133 af	
Primary	=	2.71 cfs @	12.20 hrs, Volume	= 0.133 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link EX: TOTAL WEST

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Summary for Subcatchment E1: NORTH AREA

Runoff = 2.02 cfs @ 12.13 hrs, Volume= 0.099 af, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 10-YR Rainfall=3.81"

	Area (sf)	CN	Description						
*	6,227	78	>75% Gras	>75% Grass cover, Good, HSG D					
*	10,015	98	Paved park	aved parking, HSG D					
*	2,025	98	Roof - Old E	oof - Old Bldg					
	18,267 6,227 12,040	91	Weighted A 34.09% Per 65.91% Imp	verage vious Area pervious Are	ea				
(mi	Tc Length in) (feet)	Slop (ft/f	e Velocity t) (ft/sec)	Capacity (cfs)	Description				
6	6.0				Direct Entry, CONS				

Subcatchment E1: NORTH AREA



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Summary for Subcatchment E2: SOUTH AREA

Runoff = 3.91 cfs @ 12.13 hrs, Volume= 0.192 af, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 10-YR Rainfall=3.81"

	Area (sf)	CN	Description	Description					
*	12,153	78	>75% Gras	s cover, Go	bod, HSG D				
*	4,404	98	Paved park	ing, HSG D					
	2,486	98	Roofs, HSC	δĎ					
*	1,665	91	Gravel road	ls, HSG D					
*	14,683	98	Roof - Old E	of - Old Bldg					
	35,391	91	Weighted Average						
	13,818		39.04% Per	vious Area	1				
	21,573		60.96% Imp	pervious Are	ea				
	Tc Length	Slop	e Velocity	Capacity	Description				
(m	in) (feet)	(ft/f	t) (ft/sec)	(cfs)					
6	6.0				Direct Entry, CONS				

Subcatchment E2: SOUTH AREA



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Summary for Pond D1: EXISTING DEPRESSION

Inflow Area	=	1.232 ac, 6	62.64% Impe	ervious,	Inflow Dep	oth =	2.84"	for 10-Y	R event
Inflow	=	5.93 cfs @	12.13 hrs,	Volume	= 0	0.291	af		
Outflow	=	5.03 cfs @	12.17 hrs,	Volume	= (0.240	af, Atte	n= 15%,	Lag= 2.5 min
Primary	=	5.03 cfs @	12.17 hrs,	Volume	= C	0.240	af		

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs Peak Elev= 42.83' @ 12.17 hrs Surf.Area= 4,643 sf Storage= 3,590 cf

Plug-Flow detention time= 91.8 min calculated for 0.240 af (82% of inflow) Center-of-Mass det. time= 34.7 min (816.1 - 781.4)

Volume	Inv	ert Avail.S	torage 3	Storage	Description	
#1	41.	40' 4	,439 cf	Custom	Stage Data (P	r ismatic) Listed below (Recalc)
Elevatio	on et)	Surf.Area (sq-ft)	Inc.S (cubic-	Store feet)	Cum.Store (cubic-feet)	
41.4 42.0 43.0	40 00 00	566 2,103 5,174	3	0 801 ,639	0 801 4,439	
Device	Routing	Inve	rt Outlet	Devices	3	
#1	Primary	42.50)' 10.0' Head Coef.	ong x 2 (feet) 0. (English	20.0' breadth B 20 0.40 0.60) 2.68 2.70 2.	road-Crested Rectangular Weir 0.80 1.00 1.20 1.40 1.60 70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.88 cfs @ 12.17 hrs HW=42.82' (Free Discharge) **1=Broad-Crested Rectangular Weir** (Weir Controls 4.88 cfs @ 1.52 fps) Prepared by Microsoft HydroCAD® 10.00-22 s/n 07894 © 2018 HydroCAD Software Solutions LLC



Pond D1: EXISTING DEPRESSION

1545.00-WI EXISTING WEST BUILDINGMSPrepared by MicrosoftHydroCAD® 10.00-22 s/n 07894 © 2018 HydroCAD Software Solutions LLC

Summary for Link EX: TOTAL WEST

Inflow Area	a =	1.232 ac, 6	2.64% Impervious,	Inflow Depth = 2.3	34" for 10-YR event
Inflow	=	5.03 cfs @	12.17 hrs, Volume	= 0.240 af	
Primary	=	5.03 cfs @	12.17 hrs, Volume	= 0.240 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link EX: TOTAL WEST



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Summary for Subcatchment E1: NORTH AREA

Runoff = 3.52 cfs @ 12.13 hrs, Volume= 0.179 af, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 100-YR Rainfall=6.18"

	Area (sf)	CN	Description						
*	6,227	78	>75% Gras	>75% Grass cover, Good, HSG D					
*	10,015	98	Paved park	Paved parking, HSG D					
*	2,025	98	Roof - Old I	coof - Old Bldg					
	18,267 6,227 12,040	91	Weighted A 34.09% Per 65.91% Imp	verage vious Area pervious Are	ea				
- (mi	Tc Length n) (feet)	Slop (ft/f	e Velocity t) (ft/sec)	Capacity (cfs)	Description				
6	0.0				Direct Entry, CONS				

Subcatchment E1: NORTH AREA



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Summary for Subcatchment E2: SOUTH AREA

Runoff = 6.81 cfs @ 12.13 hrs, Volume= 0.348 af, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 100-YR Rainfall=6.18"

	Area (sf)	CN	Description	Description				
*	12,153	78	>75% Gras	s cover, Go	bod, HSG D			
*	4,404	98	Paved park	ing, HSG D)			
	2,486	98	Roofs, HSC	ΒĎ				
*	1,665	91	Gravel road	ls, HSG D				
*	14,683	98	Roof - Old I	of - Old Bldg				
	35,391	91	Weighted A	verage				
	13,818		39.04% Pei	rvious Area	1			
	21,573		60.96% Imp	pervious Are	ea			
Т	c Length	Slop	e Velocity	Capacity	Description			
(mir	n) (feet)	(ft/f	t) (ft/sec)	(cfs)				
6.	0				Direct Entry, CONS			

Subcatchment E2: SOUTH AREA



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Summary for Pond D1: EXISTING DEPRESSION

Inflow Area	a =	1.232 ac, 6	62.64% Impervious,	Inflow Depth = 5.7	13" for 100-YR event
Inflow	=	10.33 cfs @	12.13 hrs, Volume	= 0.527 af	
Outflow	=	9.01 cfs @	12.16 hrs, Volume	= 0.476 af,	Atten= 13%, Lag= 2.2 min
Primary	=	9.01 cfs @	12.16 hrs, Volume	= 0.476 af	-

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs Peak Elev= 42.98' @ 12.16 hrs Surf.Area= 5,117 sf Storage= 4,344 cf

Plug-Flow detention time= 68.9 min calculated for 0.476 af (90% of inflow) Center-of-Mass det. time= 27.9 min (797.8 - 769.8)

Volume	Inv	vert Avail.	Storage	Storage	e Description	
#1	41.	.40'	4,439 cf	Custon	n Stage Data (P	rismatic)Listed below (Recalc)
Elevatio	on et)	Surf.Area (sq-ft)	Inc. (cubic	Store -feet)	Cum.Store (cubic-feet)	
41.4 42.0 43.0	40 00 00	566 2,103 5,174		0 801 3,639	0 801 4,439	
Device	Routing	l Inve	ert Outle	t Device	es	
#1	Primary	42.5	50' 10.0' Head Coef	long x (feet) ((Englis	20.0' breadth B 0.20 0.40 0.60 h) 2.68 2.70 2.	road-Crested Rectangular Weir0.801.001.201.401.60702.642.632.642.642.64

Primary OutFlow Max=8.78 cfs @ 12.16 hrs HW=42.97' (Free Discharge) **1=Broad-Crested Rectangular Weir** (Weir Controls 8.78 cfs @ 1.86 fps) Prepared by Microsoft HydroCAD® 10.00-22 s/n 07894 © 2018 HydroCAD Software Solutions LLC



Pond D1: EXISTING DEPRESSION

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Summary for Link EX: TOTAL WEST

Inflow Are	a =	1.232 ac, 6	2.64% Impervious,	Inflow Depth = 4.6	63" for 100-YR event
Inflow	=	9.01 cfs @	12.16 hrs, Volume	= 0.476 af	
Primary	=	9.01 cfs @	12.16 hrs, Volume	= 0.476 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link EX: TOTAL WEST



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Summary for Subcatchment E3: NORTH AREA

Runoff = 0.64 cfs @ 12.18 hrs, Volume= 0.035 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 1-YR Rainfall=2.40"

	Area (sf)	CN	Description			
*	12,071	78	>75% Gras	s cover, Go	od, HSG D	
*	5,658	98	Paved park	ing, HSG D		
T	17,729 12,071 5,658	84	Weighted A 68.09% Per 31.91% Imp	verage vious Area pervious Are		
ı mir)	c Length	Siop (ft/fl	e velocity (ft/sec)	Capacity (cfs)	Description	
10.	0		,	()	Direct Entry, CONS	

Subcatchment E3: NORTH AREA



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Summary for Subcatchment E4: SOUTH AREA

Runoff 1.60 cfs @ 12.18 hrs, Volume= 0.089 af, Depth= 1.52" =

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 1-YR Rainfall=2.40"

Area (sf)	CN Description			
* 10,364	78 >75% Gras	s cover, Go	Good, HSG D	
30,630 10,364 20,266	91 Weighted A 33.84% Per 66.16% Imp	verage vious Area pervious Area	a .rea	
Tc Length (min) (feet)	Slope Velocity (ft/ft) (ft/sec)	Capacity (cfs)	Description	
10.0			Direct Entry, CONS	
	Sul	ocatchme	ent E4: SOUTH AREA	
		Hydro	ograph	_
Elow (cts)	1.60 cfs		MSE 24-hr 3 1-YR Rainfall=2.40" Runoff Area=30,630 sf Runoff Volume=0.089 af Runoff Depth=1.52" Tc=10.0 min CN=91	Runoff

22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours) 10 12 14 16 18 20 6 8

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Summary for Link EX: TOTAL EAST

Inflow Are	ea =	1.110 ac,	53.61% Impervious	s, Inflow Depth =	1.3	84" for 1-Y	R event
Inflow	=	2.24 cfs @) 12.18 hrs, Volun	ne= 0.124	af		
Primary	=	2.24 cfs @) 12.18 hrs, Volun	ne= 0.124	af,	Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link EX: TOTAL EAST
1545.00-WI EXISTING EAST BUILDING

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Summary for Subcatchment E3: NORTH AREA

Runoff = 0.79 cfs @ 12.18 hrs, Volume= 0.043 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 2-YR Rainfall=2.70"

	Area (sf)	CN	Description						
*	12,071	78	>75% Gras	>75% Grass cover, Good, HSG D					
*	5,658	98	Paved park	2aved parking, HSG D					
	17,729 12,071 5,658	84	Weighted A 68.09% Per 31.91% Imp	verage vious Area pervious Are	ea				
۲ miı)	C Length	Slop (ft/f	e Velocity t) (ft/sec)	Capacity (cfs)	Description				
10	.0				Direct Entry, CONS				

Subcatchment E3: NORTH AREA



1545.00-WI EXISTING EAST BUILDING

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Summary for Subcatchment E4: SOUTH AREA

Runoff = 1.88 cfs @ 12.17 hrs, Volume= 0.105 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 2-YR Rainfall=2.70"

	Area (sf)	CN	Description							
*	10,364	78	78 >75% Grass cover, Good, HSG D							
*	20,266	98	Paved park	ing, HSG D)					
	30,630 10,364 20,266	91	Weighted A 33.84% Per 66.16% Imp	verage rvious Area pervious Ar	ea					
(Tc Length (min) (feet)	Slop (ft/f	e Velocity t) (ft/sec)	Capacity (cfs)	Description					
	10.0				Direct Entry	, CONS				
	Subcatchment E4: SOUTH AREA									
				Hydro	graph					
	2-		1.88 cfs			MSE 24-hr	Runoff			
						2 VD Deinfell=2 7				



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Summary for Link EX: TOTAL EAST

Inflow Ar	rea =	1.110 ac, 53.61%	Impervious, Inflo	w Depth = 1.60"	for 2-YR event
Inflow	=	2.66 cfs @ 12.18	nrs, Volume=	0.148 af	
Primary	=	2.66 cfs @ 12.18	nrs, Volume=	0.148 af, Atte	en= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link EX: TOTAL EAST

1545.00-WI EXISTING EAST BUILDING

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2 4 6 8

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10 12 14 16 18 20

CN=84

22 24 26 28 30 32 34 36 38 40 42 44 46 48

Summary for Subcatchment E3: NORTH AREA

Runoff = 1.36 cfs @ 12.18 hrs, Volume= 0.075 af, Depth= 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 10-YR Rainfall=3.81"

	Area (sf)	CN E	Description				
*	12,071	78 >	75% Gras	s cover, Go	od, HSG D		
*	5,658	98 F	Paved park	ing, HSG D)		
	17,729	84 V	Veighted A	verage			
	12,071	6	8.09% Per 1 01% Imr	VIOUS Area	22		
	5,000		1.9170 1114		5a		
	Tc Length	Slope	Velocity	Capacity	Description		
(I	min) (feet)	(ft/ft)	(ft/sec)	(cfs)			
	10.0				Direct Entry,	CONS	
			Sut	ocatchme	ont E3: NORT		
			Cur	Hydro	araph		
		1 1					
	ſ		26 of o				Runoff
						MSE 24_br 3	
					10	-YR Rainfall=3.81"	
					Run	off Area=17,729 sf	
	1-1				Runo	ff Volume=0.075 af	
fe)					D	upoff Dopth=2 20"	
3							
<u>c</u>	2					1c=10.0 min	

Time (hours)

1545.00-WI EXISTING EAST BUILDING

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Summary for Subcatchment E4: SOUTH AREA

Runoff = 2.92 cfs @ 12.17 hrs, Volume= 0.166 af, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 10-YR Rainfall=3.81"

	Area	a (sf)	CN	Description						
*	10),364	78	>75% Gras	75% Grass cover, Good, HSG D					
*	20),266	98	Paved park	Paved parking, HSG D					
	30 10 20 Tc L (min)),630),364),266 ength (feet)	91 Slope (ft/ft	Weighted A 33.84% Per 66.16% Imp Velocity) (ft/sec)	verage vious Area pervious Are Capacity (cfs)	ea Description				
	10.0					Direct Entry, CONS				

Subcatchment E4: SOUTH AREA



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Summary for Link EX: TOTAL EAST

Inflow Are	ea =	1.110 ac,	53.61% Impervious,	Inflow Depth = 2.6	60" for 10-YR event
Inflow	=	4.27 cfs @	12.17 hrs, Volume	= 0.241 af	
Primary	=	4.27 cfs @	12.17 hrs, Volume	= 0.241 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link EX: TOTAL EAST

1545.00-WI EXISTING EAST BUILDING

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Summary for Subcatchment E3: NORTH AREA

Runoff = 2.63 cfs @ 12.17 hrs, Volume= 0.148 af, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 100-YR Rainfall=6.18"

	Area (sf)	CN	Description						
*	12,071	78	>75% Gras	75% Grass cover, Good, HSG D					
*	5,658	98	Paved park	ing, HSG D)				
	17,729 12,071 5,658	84	Weighted A 68.09% Per 31.91% Imp	verage rvious Area pervious Are	ea				
(m	Tc Length iin) (feet)	Slop (ft/f	e Velocity t) (ft/sec)	Capacity (cfs)	Description				
1(0.0				Direct Entry, CONS				

Subcatchment E3: NORTH AREA



1545.00-WI EXISTING EAST BUILDING

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Summary for Subcatchment E4: SOUTH AREA

Runoff = 5.10 cfs @ 12.17 hrs, Volume= 0.301 af, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 100-YR Rainfall=6.18"

	Area (sf)	CN	Description						
*	10,364	78	>75% Gras	75% Grass cover, Good, HSG D					
*	20,266	98	Paved park	aved parking, HSG D					
(n	30,630 10,364 20,266 Tc Length nin) (feet)	91 Slop (ft/fl	Weighted A 33.84% Per 66.16% Imp e Velocity t) (ft/sec)	verage vious Area pervious Are Capacity (cfs)	ea Description				
1	0.0		· · ·		Direct Entry, CONS				

Subcatchment E4: SOUTH AREA



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Summary for Link EX: TOTAL EAST

Inflow Are	ea =	1.110 ac, 4	53.61% Impervious,	Inflow Depth = 4.8	35" for 100-YR event
Inflow	=	7.73 cfs @	12.17 hrs, Volume	= 0.449 af	
Primary	=	7.73 cfs @	12.17 hrs, Volume	= 0.449 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link EX: TOTAL EAST







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Summary for Subcatchment A1: TO CHAMBER

Runoff = 3.34 cfs @ 12.13 hrs, Volume= 0.166 af, Depth= 1.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 1-YR Rainfall=2.40"

	Area (sf) CN	Description						
*	6,897	7 78	>75% Gras	75% Grass cover, Good, HSG D					
*	20,441	98	Paved park	Paved parking, HSG D					
	18,273	8 98	Roofs, HSC	ΒĎ					
*	913	3 98	Sidewalk, F	ISG D					
	46,524	l 95	Weighted A	verage					
	6,897	7	14.82% Pe	rvious Area					
	39,627	7	85.18% lm	pervious Ar	ea				
	Tc Lengt	th Sloj	be Velocity	Capacity	Description				
(n	<u>nin) (fee</u>	t) (ft/	ft) (ft/sec)	(cfs)					
	6.0				Direct Entry, CONS				

Subcatchment A1: TO CHAMBER



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Summary for Subcatchment A2: UNDETAINED

Runoff = 0.31 cfs @ 12.14 hrs, Volume= 0.014 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 1-YR Rainfall=2.40"

	Area (sf)	CN	Description					
*	4,871	78	>75% Gras	s cover, Go	bod, HSG D			
*	1,397	98	Paved park	ing, HSG D)			
*	154	98	Sidewalk, H	idewalk, HSG D				
*	711	98	Terrace, HS	SG D				
	7,133	84	Weighted A	verage				
	4,871		68.29% Pervious Area					
	2,262		31.71% Imp	pervious Are	ea			
Тс	c Length	Slop	e Velocity	Capacity	Description			
(min) (feet)	(ft/f	t) (ft/sec)	(cfs)				
6.0)				Direct Entry, CONS			

Subcatchment A2: UNDETAINED



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Summary for Pond 1P: CHAMBER

Inflow Area	=	1.068 ac, 8	5.18% Impe	ervious,	Inflow Depth =	1.87"	for 1-YR	event
Inflow	=	3.34 cfs @	12.13 hrs,	Volume	= 0.166	3 af		
Outflow	=	1.70 cfs @	12.23 hrs,	Volume	= 0.159	9 af, Atte	en= 49%,	Lag= 6.2 min
Primary	=	1.70 cfs @	12.23 hrs,	Volume	= 0.159	9 af		

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs Peak Elev= 43.21' @ 12.23 hrs Surf.Area= 0.023 ac Storage= 0.043 af

Plug-Flow detention time= 50.8 min calculated for 0.159 af (96% of inflow) Center-of-Mass det. time= 29.7 min (806.9 - 777.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	40.50'	0.040 af	28.50'W x 35.29'L x 6.75'H Field A
			0.156 af Overall - 0.056 af Embedded = 0.100 af x 40.0% Voids
#2A	41.25'	0.056 af	ADS_StormTech MC-4500 +Cap x 21 Inside #1
			Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
			Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
			3 Rows of 7 Chambers
			Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		0.096 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	40.50'	12.0" Round Culvert
	2		L= 42.0' RCP, sq.cut end projecting, Ke= 0.500
			Inlet / Outlet Invert= 40.50' / 40.25' S= 0.0060 '/' Cc= 0.900
			n= 0.011 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	41.25'	7.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	43.10'	8.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	44.25'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=1.69 cfs @ 12.23 hrs HW=43.20' (Free Discharge)

-1=Culvert (Passes 1.69 cfs of 5.61 cfs potential flow)

2=Orifice/Grate (Orifice Controls 1.66 cfs @ 6.19 fps)

-3=Orifice/Grate (Orifice Controls 0.03 cfs @ 1.06 fps)

-4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: CHAMBER - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap volume)

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

7 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 33.29' Row Length +12.0" End Stone x 2 = 35.29' Base Length 3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width 9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

21 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 2,450.5 cf Chamber Storage

6,789.2 cf Field - 2,450.5 cf Chambers = 4,338.7 cf Stone x 40.0% Voids = 1,735.5 cf Stone Storage

Chamber Storage + Stone Storage = 4,186.0 cf = 0.096 afOverall Storage Efficiency = 61.7%Overall System Size = $35.29' \times 28.50' \times 6.75'$

21 Chambers 251.5 cy Field 160.7 cy Stone





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Pond 1P: CHAMBER

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Summary for Link PR: TOTAL WEST

Inflow Ar	ea =	1.232 ac,	78.07% Impervious,	Inflow Depth = 1.6	69" for 1-YR event
Inflow	=	1.88 cfs @	12.20 hrs, Volume	= 0.173 af	
Primary	=	1.88 cfs @	12.20 hrs, Volume	= 0.173 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link PR: TOTAL WEST



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Summary for Subcatchment A1: TO CHAMBER

Runoff = 3.82 cfs @ 12.13 hrs, Volume= 0.192 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 2-YR Rainfall=2.70"

	Area (sf)	CN	Description				
*	6,897	78	>75% Gras	s cover, Go	ood, HSG D		
*	20,441	98	Paved park	ing, HSG D)		
	18,273	98	Roofs, HSC	ΒĎ			
*	913	98	Sidewalk, H	ISG D			
	46,524	95	Weighted A	verage			
	6,897	397 14.82% Pervious Area					
	39,627		85.18% Imp	pervious Are	rea		
	Tc Length	Slop	e Velocity	Capacity	Description		
<u>(mi</u>	in) (feet)	(ft/f	t) (ft/sec)	(cfs)			
6	6.0				Direct Entry, CONS		

Subcatchment A1: TO CHAMBER



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Summary for Subcatchment A2: UNDETAINED

Runoff = 0.37 cfs @ 12.14 hrs, Volume= 0.017 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 2-YR Rainfall=2.70"

	Area (sf)	CN	Description				
*	4,871	78	>75% Gras	s cover, Go	bod, HSG D		
*	1,397	98	Paved park	ing, HSG D)		
*	154	98	Sidewalk, H	ISG D			
*	711	98	Terrace, HS	SG D			
	7,133	84	Weighted A	verage			
	4,871	68.29% Pervious Area					
	2,262		31.71% Imp	pervious Are	ea		
T	c Length	Slop	e Velocity	Capacity	Description		
(min) (feet)	<u>(ft/f</u>	t) (ft/sec)	(cfs)			
6.0)				Direct Entry, CONS		

Subcatchment A2: UNDETAINED



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Summary for Pond 1P: CHAMBER

Inflow Area	=	1.068 ac, 8	35.18% Impe	ervious,	Inflow Depth =	2.16"	for 2-YR	event
Inflow	=	3.82 cfs @	12.13 hrs,	Volume	= 0.19	2 af		
Outflow	=	2.26 cfs @	12.22 hrs,	Volume	= 0.18	5 af, Atte	en= 41%,	Lag= 5.3 min
Primary	=	2.26 cfs @	12.22 hrs,	Volume	= 0.18	5 af		

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs Peak Elev= 43.50' @ 12.22 hrs Surf.Area= 0.023 ac Storage= 0.048 af

Plug-Flow detention time= 47.2 min calculated for 0.185 af (96% of inflow) Center-of-Mass det. time= 28.5 min (802.9 - 774.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	40.50'	0.040 af	28.50'W x 35.29'L x 6.75'H Field A
			0.156 af Overall - 0.056 af Embedded = 0.100 af x 40.0% Voids
#2A	41.25'	0.056 af	ADS_StormTech MC-4500 +Cap x 21 Inside #1
			Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
			Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
			3 Rows of 7 Chambers
			Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		0.096 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	40.50'	12.0" Round Culvert
	5		L= 42.0' RCP, sq.cut end projecting, Ke= 0.500
			Inlet / Outlet Invert= 40.50' / 40.25' S= 0.0060 '/' Cc= 0.900
			n= 0.011 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	41.25'	7.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	43.10'	8.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	44.25'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=2.19 cfs @ 12.22 hrs HW=43.47' (Free Discharge)

-1=Culvert (Passes 2.19 cfs of 5.94 cfs potential flow)

2=Orifice/Grate (Orifice Controls 1.79 cfs @ 6.68 fps)

-3=Orifice/Grate (Orifice Controls 0.41 cfs @ 2.06 fps)

-4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 1P: CHAMBER - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap volume)

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

7 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 33.29' Row Length +12.0" End Stone x 2 = 35.29' Base Length 3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width 9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

21 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 2,450.5 cf Chamber Storage

6,789.2 cf Field - 2,450.5 cf Chambers = 4,338.7 cf Stone x 40.0% Voids = 1,735.5 cf Stone Storage

Chamber Storage + Stone Storage = 4,186.0 cf = 0.096 afOverall Storage Efficiency = 61.7%Overall System Size = $35.29' \times 28.50' \times 6.75'$

21 Chambers 251.5 cy Field 160.7 cy Stone





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Pond 1P: CHAMBER

Summary for Link PR: TOTAL WEST

Inflow A	rea =	1.232 ac, 7	78.07% Impervious,	Inflow Depth = 1.9	97" for 2-YR event
Inflow	=	2.48 cfs @	12.21 hrs, Volume	= 0.202 af	
Primary	=	2.48 cfs @	12.21 hrs, Volume	= 0.202 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link PR: TOTAL WEST

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Summary for Subcatchment A1: TO CHAMBER

Runoff = 5.59 cfs @ 12.13 hrs, Volume= 0.289 af, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 10-YR Rainfall=3.81"

	Area (sf)	CN	Description				
*	6,897	78	>75% Gras	s cover, Go	bod, HSG D		
*	20,441	98	Paved park	ing, HSG D)		
	18,273	98	Roofs, HSC	ΒĎ			
*	913	98	Sidewalk, H	ISG D			
	46,524	95	Weighted A	verage			
	6,897	,897 14.82% Pervious Area					
	39,627		85.18% Imp	pervious Are	ea		
٦	c Length	Slop	e Velocity	Capacity	Description		
(mi	n) (feet)	(ft/fl	:) (ft/sec)	(cfs)			
6	.0				Direct Entry, CONS		

Subcatchment A1: TO CHAMBER



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Summary for Subcatchment A2: UNDETAINED

Runoff = 0.64 cfs @ 12.13 hrs, Volume= 0.030 af, Depth= 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 10-YR Rainfall=3.81"

	Area (sf)	CN	Description				
*	4,871	78	>75% Gras	s cover, Go	bod, HSG D		
*	1,397	98	Paved park	ing, HSG D)		
*	154	98	Sidewalk, H	ISG D			
*	711	98	Terrace, HS	SG D			
	7,133	7,133 84 Weighted Average					
	4,871	68.29% Pervious Area					
	2,262		31.71% Imp	pervious Ar	ea		
_							
To	c Length	Slop	e Velocity	Capacity	Description		
(min) (feet)	(ft/f	t) (ft/sec)	(cfs)			
6.0)				Direct Entry, CONS		

Subcatchment A2: UNDETAINED



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Summary for Pond 1P: CHAMBER

Inflow Area	=	1.068 ac, 8	5.18% Impervious	, Inflow Depth =	3.24" fo	r 10-YR event
Inflow	=	5.59 cfs @	12.13 hrs, Volum	e= 0.289	af	
Outflow	=	4.00 cfs @	12.20 hrs, Volum	e= 0.282	af, Atten=	28%, Lag= 4.3 min
Primary	=	4.00 cfs @	12.20 hrs, Volum	e= 0.282	af	-

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs Peak Elev= 44.32' @ 12.20 hrs Surf.Area= 0.023 ac Storage= 0.062 af

Plug-Flow detention time= 38.1 min calculated for 0.281 af (97% of inflow) Center-of-Mass det. time= 25.0 min (791.5 - 766.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	40.50'	0.040 af	28.50'W x 35.29'L x 6.75'H Field A
			0.156 af Overall - 0.056 af Embedded = 0.100 af x 40.0% Voids
#2A	41.25'	0.056 af	ADS_StormTech MC-4500 +Cap x 21 Inside #1
			Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
			Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
			3 Rows of 7 Chambers
			Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		0.096 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	40.50'	12.0" Round Culvert
	5		L= 42.0' RCP, sq.cut end projecting, Ke= 0.500
			Inlet / Outlet Invert= 40.50' / 40.25' S= 0.0060 '/' Cc= 0.900
			n= 0.011 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	41.25'	7.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	43.10'	8.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	44.25'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=3.97 cfs @ 12.20 hrs HW=44.32' (Free Discharge)

-1=Culvert (Passes 3.97 cfs of 6.89 cfs potential flow)

2=Orifice/Grate (Orifice Controls 2.14 cfs @ 8.03 fps)

-3=Orifice/Grate (Orifice Controls 1.58 cfs @ 4.53 fps)

-4=Sharp-Crested Rectangular Weir (Weir Controls 0.24 cfs @ 0.87 fps)

Pond 1P: CHAMBER - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap volume)

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

7 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 33.29' Row Length +12.0" End Stone x 2 = 35.29' Base Length 3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width 9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

21 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 2,450.5 cf Chamber Storage

6,789.2 cf Field - 2,450.5 cf Chambers = 4,338.7 cf Stone x 40.0% Voids = 1,735.5 cf Stone Storage

Chamber Storage + Stone Storage = 4,186.0 cf = 0.096 afOverall Storage Efficiency = 61.7%Overall System Size = $35.29' \times 28.50' \times 6.75'$

21 Chambers 251.5 cy Field 160.7 cy Stone





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Pond 1P: CHAMBER

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Summary for Link PR: TOTAL WEST

Inflow Are	ea =	1.232 ac,	78.07% Impervious,	Inflow Depth = 3.0	04" for 10-YR event
Inflow	=	4.44 cfs @	12.19 hrs, Volume	= 0.312 af	
Primary	=	4.44 cfs @	12.19 hrs, Volume	= 0.312 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link PR: TOTAL WEST

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Summary for Subcatchment A1: TO CHAMBER

Runoff = 9.33 cfs @ 12.13 hrs, Volume= 0.498 af, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 100-YR Rainfall=6.18"

	Area (sf)	CN	Description				
*	6,897	78	>75% Gras	s cover, Go	pod, HSG D		
*	20,441	98	Paved park	ing, HSG D)		
	18,273	98	Roofs, HSC	ΒĎ			
*	913	98	Sidewalk, H	ISG D			
	46,524	46,524 95 Weighted Average					
	6,897	14.82% Pervious Area					
	39,627		85.18% Imp	pervious Are	ea		
٦	c Length	Slop	e Velocity	Capacity	Description		
<u>(mi</u>	n) (feet)	(ft/f	t) (ft/sec)	(cfs)			
6	.0				Direct Entry, CONS		

Subcatchment A1: TO CHAMBER



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Summary for Subcatchment A2: UNDETAINED

Runoff = 1.23 cfs @ 12.13 hrs, Volume= 0.060 af, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 100-YR Rainfall=6.18"

	Area (sf)	CN	Description					
*	4,871	78	>75% Gras	s cover, Go	ood, HSG D			
*	1,397	98	Paved park	ing, HSG D)			
*	154	98	Sidewalk, H	ISG D				
*	711	98	Terrace, HS	SG D				
	7,133	133 84 Weighted Average						
	4,871		68.29% Pervious Area					
	2,262		31.71% Impervious Area					
Т	Longth	Clan		Conosity	Description			
(min)	c Lengin	210p		Capacity	Description			
) (leel)	(11/11	.) (II/sec)	(CIS)				
6.0)				Direct Entry, CONS			

Subcatchment A2: UNDETAINED



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Summary for Pond 1P: CHAMBER

Inflow Area	=	1.068 ac, 8	35.18% Impe	ervious,	Inflow De	epth =	5.59"	for 1	00-YF	R event	
Inflow	=	9.33 cfs @	12.13 hrs,	Volume	=	0.498	af				
Outflow	=	7.74 cfs @	12.17 hrs,	Volume	=	0.491	af, Atte	n= 17	'%, L	ag= 2.4 m	in
Primary	=	7.74 cfs @	12.17 hrs,	Volume	=	0.491	af				

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs Peak Elev= 45.18' @ 12.17 hrs Surf.Area= 0.023 ac Storage= 0.075 af

Plug-Flow detention time= 29.0 min calculated for 0.491 af (99% of inflow) Center-of-Mass det. time= 19.9 min (776.8 - 756.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	40.50'	0.040 af	28.50'W x 35.29'L x 6.75'H Field A
			0.156 af Overall - 0.056 af Embedded = 0.100 af x 40.0% Voids
#2A	41.25'	0.056 af	ADS_StormTech MC-4500 +Cap x 21 Inside #1
			Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
			Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
			3 Rows of 7 Chambers
			Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf
		0.096 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	40.50'	12.0" Round Culvert
	2		L= 42.0' RCP, sq.cut end projecting, Ke= 0.500
			Inlet / Outlet Invert= 40.50' / 40.25' S= 0.0060 '/' Cc= 0.900
			n= 0.011 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	41.25'	7.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	43.10'	8.0" Vert. Orifice/Grate C= 0.600
#4	Device 1	44.25'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=7.69 cfs @ 12.17 hrs HW=45.13' (Free Discharge)

-1=Culvert (Inlet Controls 7.69 cfs @ 9.79 fps)

2=Orifice/Grate (Passes < 2.44 cfs potential flow)

-3=Orifice/Grate (Passes < 2.19 cfs potential flow)

-4=Sharp-Crested Rectangular Weir (Passes < 10.35 cfs potential flow)

Pond 1P: CHAMBER - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap volume)

Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap Cap Storage= +35.7 cf x 2 x 3 rows = 214.2 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

7 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 33.29' Row Length +12.0" End Stone x 2 = 35.29' Base Length 3 Rows x 100.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 28.50' Base Width 9.0" Base + 60.0" Chamber Height + 12.0" Cover = 6.75' Field Height

21 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 3 Rows = 2,450.5 cf Chamber Storage

6,789.2 cf Field - 2,450.5 cf Chambers = 4,338.7 cf Stone x 40.0% Voids = 1,735.5 cf Stone Storage

Chamber Storage + Stone Storage = 4,186.0 cf = 0.096 afOverall Storage Efficiency = 61.7%Overall System Size = $35.29' \times 28.50' \times 6.75'$

21 Chambers 251.5 cy Field 160.7 cy Stone





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Pond 1P: CHAMBER

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Summary for Link PR: TOTAL WEST

Inflow Ar	ea =	1.232 ac, 7	8.07% Impervious,	Inflow Depth = 5.3	36" for 100-YR event
Inflow	=	8.91 cfs @	12.15 hrs, Volume	= 0.550 af	
Primary	=	8.91 cfs @	12.15 hrs, Volume	= 0.550 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link PR: TOTAL WEST


Runoff = 2.86 cfs @ 12.13 hrs, Volume= 0.135 af, Depth= 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 1-YR Rainfall=2.40"

Area	(ac)	CN	Desc	cription				
0.4	440	78	75%	5% Grass cover, Good, HSG D				
0.	298	98	Pave	ed parking,	HSG D			
0.	347	98	Roof	s, HSG D				
0.	037	98	Side	walk pave	ment, HSG	i D		
1.	122	90	Weig	hted Aver	age			
0.4	440		39.22	2% Pervio	us Area			
0.	682		60.78	8% Imperv	rious Area			
Тс	Lengt	h	Slope	Velocity	Capacity	Description		
(min)	(fee	t)	(ft/ft)	(ft/sec)	(cfs)			
6.0						Direct Entry, CONS		
	Area (0. 0. 0. 0. 1. 0. 0. Tc (min) 6.0	Area (ac) 0.440 0.298 0.347 0.037 1.122 0.440 0.682 Tc Lengt (min) (feet 6.0	Area (ac) CN 0.440 78 0.298 98 0.347 98 0.037 98 1.122 90 0.440 0.682 Tc Length (min) (feet) 6.0	Area (ac) CN Desc 0.440 78 75% 0.298 98 Pave 0.347 98 Roof 0.037 98 Sider 1.122 90 Weig 0.440 39.22 0.682 0.682 60.78 Tc Length Slope (min) (feet) (ft/ft) 6.0	Area (ac)CNDescription0.4407875% Grass cov0.29898Paved parking,0.34798Roofs, HSG D0.03798Sidewalk paver1.12290Weighted Aver0.44039.22% Pervior0.68260.78% ImpervTcLengthSlopeVelocity(ft/ft)(min)(feet)6.0	Area (ac)CNDescription0.4407875% Grass cover, Good,0.29898Paved parking, HSG D0.34798Roofs, HSG D0.03798Sidewalk pavement, HSG1.12290Weighted Average0.44039.22% Pervious Area0.68260.78% Impervious AreaTcLengthSlopeVelocityCapacity(min)(feet)(ft/ft)6.0		

Subcatchment A3: PROPOSED 2-STORY & PARKING LOT



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Summary for Pond 3P: POND

Inflow Area	=	1.122 ac, 6	0.78% Impe	ervious, Inflow	Depth = 1.4	4" for 1-YF	Revent
Inflow :	=	2.86 cfs @	12.13 hrs,	Volume=	0.135 af		
Outflow :	=	1.60 cfs @	12.22 hrs,	Volume=	0.135 af,	Atten= 44%,	Lag= 5.4 min
Primary :	=	1.60 cfs @	12.22 hrs,	Volume=	0.135 af		
Secondary :	=	0.00 cfs @	0.00 hrs,	Volume=	0.000 af		

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs Peak Elev= 49.24' @ 12.22 hrs Surf.Area= 1,302 sf Storage= 883 cf

Plug-Flow detention time= 5.2 min calculated for 0.135 af (100% of inflow) Center-of-Mass det. time= 5.2 min (802.4 - 797.2)

Volume	Invert	Avail.Sto	rage Storage	Description			
#1	48.00'	8,9	51 cf Custom	i Stage Data (Pi	rismatic)Listed below (Recalc)		
Elevatio	on Si	urf.Area	Inc.Store	Cum.Store			
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)			
48.0	00	15	0	0			
49.0	00	1,151	583	583			
50.0	00	1,768	1,460	2,043			
51.0	00	2,515	2,142	4,184			
52.0	00	3,392	2,954	7,138			
52.5	50	3,863	1,814	8,951			
Device	Routing	Invert	Outlet Device	s			
#1	Primary	48.00'	 12.0" Round Culvert L= 40.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 48.00' / 47.80' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf 				
#2	Device 1	48.00'	8.0" Vert. Ori	fice/Grate C=	0.600		
#3	Device 1	51.05'	36.0" Horiz. (Limited to wei	Drifice/Grate Control of the second	C= 0.600 ads		
#4	Secondary	51.50'	20.0' long x Head (feet) 0 Coef. (English	10.0' breadth B 0.20 0.40 0.60 1) 2.49 2.56 2.	road-Crested Rectangular Weir 0.80 1.00 1.20 1.40 1.60 70 2.69 2.68 2.69 2.67 2.64		
Primary 1=Cu -2= -3=	• OutFlow M Ilvert (Passe •Orifice/Grat •Orifice/Grat	lax=1.59 cfs (es 1.59 cfs of te (Orifice Co te (Controls (12.22 hrs HV 2.82 cfs potent ntrols 1.59 cfs (0.00 cfs)	N=49.23' (Free ial flow) @ 4.56 fps)	e Discharge)		
<u> </u>		Mar. 0.00 -			Discharge)		

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Pond 3P: POND

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Summary for Link PR: TOTAL EAST

Inflow Are	ea =	1.122 ac,	60.78% Impervious,	Inflow Depth = 1.4	44" for 1-YR event
Inflow	=	1.60 cfs @) 12.22 hrs, Volume	e= 0.135 af	
Primary	=	1.60 cfs @) 12.22 hrs, Volume	e= 0.135 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link PR: TOTAL EAST

Summary for Subcatchment A3: PROPOSED 2-STORY & PARKING LOT

Runoff = 3.37 cfs @ 12.13 hrs, Volume= 0.160 af, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 2-YR Rainfall=2.70"

	Area	(ac)	CN	Desc	ription				
*	0.4	440	78	75%	5% Grass cover, Good, HSG D				
	0.	298	98	Pave	d parking,	HSG D			
	0.	347	98	Roof	s, HSG D				
*	0.	037	98	Side	walk pave	ment, HSG	G D		
	1.	122	90	Weig	hted Aver	age			
	0.4	440		39.22	2% Pervio	us Area			
	0.	682		60.78	3% Imperv	rious Area			
	Тс	Lengt	h	Slope	Velocity	Capacity	Description		
	(min)	(fee	t)	(ft/ft)	(ft/sec)	(cfs)			
	6.0						Direct Entry, CONS		

Subcatchment A3: PROPOSED 2-STORY & PARKING LOT



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Summary for Pond 3P: POND

Inflow Area	=	1.122 ac, 6	0.78% Impe	ervious,	Inflow Depth =	1.71"	for 2-YR	event
Inflow :	=	3.37 cfs @	12.13 hrs,	Volume=	= 0.160	af		
Outflow :	=	1.76 cfs @	12.23 hrs,	Volume=	= 0.160	af, At	ten= 48%,	Lag= 5.9 min
Primary :	=	1.76 cfs @	12.23 hrs,	Volume=	= 0.160	af		
Secondary :	=	0.00 cfs @	0.00 hrs,	Volume=	= 0.000	af		

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs Peak Elev= 49.43' @ 12.23 hrs Surf.Area= 1,415 sf Storage= 1,132 cf

Plug-Flow detention time= 5.8 min calculated for 0.160 af (100% of inflow) Center-of-Mass det. time= 5.7 min (799.5 - 793.8)

Volume	Invert	Avail.Sto	rage Storage	ge Storage Description					
#1	48.00'	8,9	51 cf Custon	n Stage Data (Pi	rismatic)Listed below (Recalc)				
Elevatio	on Si	urf.Area	Inc.Store	Cum.Store					
(fee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)					
48.0	00	15	0	0					
49.0	00	1,151	583	583					
50.0	00	1,768	1,460	2,043					
51.0	00	2,515	2,142	4,184					
52.0	00	3,392	2,954	7,138					
52.5	50	3,863	1,814	8,951					
Device	Routing	Invert	Outlet Device	es					
#1	Primary	48.00')' 12.0" Round Culvert L= 40.0' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 48.00' / 47.80' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf						
#2	Device 1	48.00'	8.0" Vert. Or	ifice/Grate C=	0.600				
#3	Device 1	51.05'	36.0" Horiz.	Orifice/Grate C	C= 0.600 ads				
#4	Secondary	51.50'	20.0' long x Head (feet) (Coef. (Englis)	10.0' breadth B 0.20 0.40 0.60 h) 2.49 2.56 2.	road-Crested Rectangular Weir 0.80 1.00 1.20 1.40 1.60 70 2.69 2.68 2.69 2.67 2.64				
Primary 1=Cu -2= -3=	Primary OutFlow Max=1.75 cfs @ 12.23 hrs HW=49.42' (Free Discharge) 1=Culvert (Passes 1.75 cfs of 3.09 cfs potential flow) 2=Orifice/Grate (Orifice Controls 1.75 cfs @ 5.02 fps) 3=Orifice/Grate (Controls 0.00 cfs)								
<u> </u>					Discharge)				

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

1545.00-WI PROPOSED EAST BUILDING Prepared by Microsoft

Hydrograph Inflow 3.37 cfs Outflow
 Primary
 Secondary Inflow Area=1.122 ac Peak Elev=49.43' Storage=1,132 cf 3-1 76 cfs 1.76 cfs 🝃 Flow (cfs) 2 1 0.00 cfs 0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

Pond 3P: POND

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Summary for Link PR: TOTAL EAST

Inflow Are	a =	1.122 ac, 6	0.78% Impervious,	Inflow Depth = 1.	71" for 2-YR event
Inflow	=	1.76 cfs @	12.23 hrs, Volume	e= 0.160 af	
Primary	=	1.76 cfs @	12.23 hrs, Volume	e= 0.160 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link PR: TOTAL EAST

Summary for Subcatchment A3: PROPOSED 2-STORY & PARKING LOT

Runoff = 5.26 cfs @ 12.13 hrs, Volume= 0.256 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 10-YR Rainfall=3.81"

	Area	(ac)	CN	Desc	ription				
*	0.4	440	78	75%	5% Grass cover, Good, HSG D				
	0.	298	98	Pave	d parking,	HSG D			
	0.	347	98	Roof	s, HSG D				
*	0.	037	98	Side	walk pave	ment, HSG	i D		
	1.	122	90	Weig	hted Aver	age			
	0.4	440		39.22	2% Pervio	us Area			
	0.	682		60.78	3% Imperv	rious Area			
	Тс	Lengt	h :	Slope	Velocity	Capacity	Description		
_	(min)	(fee	t)	(ft/ft)	(ft/sec)	(cfs)			
	6.0						Direct Entry, CONS		
							•··		

Subcatchment A3: PROPOSED 2-STORY & PARKING LOT



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Summary for Pond 3P: POND

Inflow Area	=	1.122 ac, 6	0.78% Impe	rvious, In	flow Depth =	2.74"	for 10-Y	R event
Inflow =	=	5.26 cfs @	12.13 hrs, '	Volume=	0.256	af		
Outflow =	=	2.25 cfs @	12.26 hrs, '	Volume=	0.256	af, Atte	en= 57%,	Lag= 7.6 min
Primary =	=	2.25 cfs @	12.26 hrs, '	Volume=	0.256	af		-
Secondary =	=	0.00 cfs @	0.00 hrs, '	Volume=	0.000	af		

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs Peak Elev= 50.12' @ 12.26 hrs Surf.Area= 1,858 sf Storage= 2,260 cf

Plug-Flow detention time= 8.1 min calculated for 0.256 af (100% of inflow) Center-of-Mass det. time= 8.1 min (792.5 - 784.4)

Volume	Invert	Avail.Sto	rage Storage	Description	
#1	48.00'	8,95	51 cf Custom	n Stage Data (Pi	r ismatic) Listed below (Recalc)
Elevatio	on Si	urf.Area	Inc.Store	Cum.Store	
(tee	et)	(sq-ft)	(cubic-feet)	(cubic-feet)	
48.0	00	15	0	0	
49.0	00	1,151	583	583	
50.0	00	1,768	1,460	2,043	
51.0	00	2,515	2,142	4,184	
52.0	00	3,392	2,954	7,138	
52.5	50	3,863	1,814	8,951	
Device	Routing	Invert	Outlet Device	S	
#1	Primary	48.00'	12.0" Round L= 40.0' RC Inlet / Outlet I n= 0.012, Flo	l Culvert P, sq.cut end pro nvert= 48.00' / 4 ow Area= 0.79 sf	ojecting, Ke= 0.500 7.80' S= 0.0050 '/' Cc= 0.900
#2	Device 1	48.00'	8.0" Vert. Ori	ifice/Grate C=	0.600
#3	Device 1	51.05'	36.0" Horiz. (Limited to we	Orifice/Grate Control of the other other of the other o)= 0.600 ads
#4	Secondary	51.50'	20.0' long x Head (feet) C Coef. (English	10.0' breadth B 0.20 0.40 0.60 n) 2.49 2.56 2.	road-Crested Rectangular Weir 0.80 1.00 1.20 1.40 1.60 70 2.69 2.68 2.69 2.67 2.64
Primary 1=Cu -2= -3=	• OutFlow M Ilvert (Passo •Orifice/Gra •Orifice/Gra	lax=2.24 cfs (es 2.24 cfs of te (Orifice Con te (Controls (12.26 hrs H\ 4.51 cfs potent ntrols 2.24 cfs (0.00 cfs)	N=50.12' (Free ial flow) @ 6.43 fps)	Discharge)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

1545.00-WI PROPOSED EAST BUILDING Prepared by Microsoft

1

0.00 cfs 0 2

Hydrograph Inflow 5.26 cfs Outflow
 Primary
 Secondary Inflow Area=1.122 ac Peak Elev=50.12' 5 Storage=2,260 cf 4 Flow (cfs) 2 25 cfs 3 2.25 cfs 2

> 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 Time (hours)

Pond 3P: POND

1545.00-WI PROPOSED EAST BUILDINGMSPrepared by MicrosoftHydroCAD® 10.00-22 s/n 07894 © 2018 HydroCAD Software Solutions LLC

Summary for Link PR: TOTAL EAST

Inflow Ar	ea =	1.122 ac, 6	60.78% Impervious,	Inflow Depth = 2.7	74" for 10-YR event
Inflow	=	2.25 cfs @	12.26 hrs, Volume	= 0.256 af	
Primary	=	2.25 cfs @	12.26 hrs, Volume	= 0.256 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link PR: TOTAL EAST

Prepared by Microsoft

Summary for Subcatchment A3: PROPOSED 2-STORY & PARKING LOT

Runoff 9.29 cfs @ 12.13 hrs, Volume= 0.469 af, Depth= 5.02" =

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs MSE 24-hr 3 100-YR Rainfall=6.18"

	Area (ac)	CN	Desc	ription		
*	0.4	140	78	75%	Grass cov	ver, Good, H	HSG D
	0.2	298	98	Pave	d parking,	HSG D	
	0.3	347	98	Roof	s, HSG D		
*	0.0)37	98	Side	walk pavei	ment, HSG	G D
	1.1	122	90	Weig	hted Aver	age	
	0.4	140		39.22	2% Pervio	us Area	
	0.6	582		60.78	3% Imperv	rious Area	
	Тс	Lengtl	h :	Slope	Velocity	Capacity	Description
	(min)	(feet	:)	(ft/ft)	(ft/sec)	(cfs)	
	6.0						Direct Entry, CONS

Subcatchment A3: PROPOSED 2-STORY & PARKING LOT



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Summary for Pond 3P: POND

Inflow Area	=	1.122 ac, 6	0.78% Impe	ervious,	Inflow Depth =	5.0	2" for	100-`	YR event
Inflow :	=	9.29 cfs @	12.13 hrs,	Volume=	= 0.469) af			
Outflow :	=	4.79 cfs @	12.24 hrs,	Volume=	= 0.469) af,	Atten=	48%,	Lag= 6.4 min
Primary :	=	4.79 cfs @	12.24 hrs,	Volume=	= 0.469) af			
Secondary :	=	0.00 cfs @	0.00 hrs,	Volume=	= 0.000) af			

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs Peak Elev= 51.21' @ 12.23 hrs Surf.Area= 2,698 sf Storage= 4,727 cf

Plug-Flow detention time= 11.8 min calculated for 0.469 af (100% of inflow) Center-of-Mass det. time= 11.8 min (784.3 - 772.5)

Volume	Invert	Avail.Stor	age Storage	Description	
#1	48.00'	8,95	1 cf Custon	n Stage Data (Pi	rismatic)Listed below (Recalc)
Elevation (feet)	Su	f.Area (sɑ-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	
48.00		15	0	0	
49.00		1,151	583	583	
50.00		1.768	1.460	2.043	
51.00		2.515	2.142	4.184	
52.00		3,392	2,954	7,138	
52.50		3,863	1,814	8,951	
Device F	Routing	Invert	Outlet Device	es	
#1 F	Primary	48.00'	12.0" Round L= 40.0' RC Inlet / Outlet I n= 0.012. Flo	d Culvert P, sq.cut end pro Invert= 48.00' / 4 ow Area= 0.79 sf	ojecting, Ke= 0.500 7.80' S= 0.0050 '/' Cc= 0.900
#2 D	Device 1	48.00'	8.0" Vert. Or	ifice/Grate C=	0.600
#3 C	Device 1	51.05'	36.0" Horiz.	Orifice/Grate C	C= 0.600 ads
#4 S	Secondary	51.50'	20.0' long x Head (feet) (Coef. (Englis)	10.0' breadth B 0.20 0.40 0.60 h) 2.49 2.56 2.	road-Crested Rectangular Weir 0.80 1.00 1.20 1.40 1.60 70 2.69 2.68 2.69 2.67 2.64
Primary O 1=Culv -2=O	outFlow Ma ert (Passes rifice/Grate	ax=4.65 cfs @ s 4.65 cfs of @ e (Orifice Cor	0 12.24 hrs H 6.09 cfs potent htrols 2.85 cfs	W=51.20' (Free tial flow) @ 8.15 fps)	Discharge)

-3=Orifice/Grate (Weir Controls 1.80 cfs @ 1.27 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=48.00' (Free Discharge) 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Pond 3P: POND

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Summary for Link PR: TOTAL EAST

Inflow Ar	ea =	1.122 ac, 6	60.78% Impervious,	Inflow Depth = 5.0	02" for 100-YR event
Inflow	=	4.79 cfs @	12.24 hrs, Volume	= 0.469 af	
Primary	=	4.79 cfs @	12.24 hrs, Volume	= 0.469 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs



Link PR: TOTAL EAST





<pre>vinSLAMM Version 10.4.1 VinSLAMM Version 10.4.1 Rain file name: C:\WinSLAMM Files\ Particulate Solids Concentration fi Runoff Coefficient file name: C:\W Residential Street Delivery file name Institutional Street Delivery file name Commercial Street Delivery file name: Thus Street Delivery file name: Apply Street Delivery file name: Apply Street Delivery file name: Source Area PSD and Peak to Average Source Area PSD and Peak to Average Area Source Area Source Area Parking 1: 0.021 ac. Supple Parking Area Source Area Area Source Area Area Source Area Area Source Area Parking 1: 0.021 ac.</pre>	<pre>\Rain Files\WI \Rain Files\WI Ile name: C:\WinSLAMM Files\ mame: C:\WinSLAM ne: C:\WinSLAM ne: C:\WinSLAM ne: C:\WinSLAMM F let the After E le name: C:\WinSLAMM F let the After E le name: C:\WinSLAMM F let the after (</pre>	Milwaukee 69.RAN inSLAMM Files/v10. WI_SL06 Dec06.rsvy MM Files/WI_Com Ins M Files/WI_Com Ins M Files/WI_Com Ins MM Files/WI_Com Ins MM Files/WI_Com Ins MM Files/WI_Com Ins MM Files/WI_Com Ins MM Files/WI_Com Ins ac) tood Street I le: C:\WinSLAMM Files/WI_C le: C:\WinSLAMM Files/WI_C ac): 1.067 ac): 1.067 ac): 1.067 source Area PS Source Area PSD F Normal Clayey	<pre>.1 WI_AVG01.pscx d Other Urban Devise Inst Indust Dec06.s st Indust Dec06.s other Urban Devise 5.std 0.the Urban Devise 5.std Dirt Mass Balance 5.std 0.the Source 12/31/69 03/12 bile: C:\WinSL SD File: C:\WinSL Source Area PSD Source Area PSD </pre>	<pre>c06.std c06.std fd c06.std c06.std fd c06.std area PSD Files.csv Area PSD Files.csv Files\NURP.cpz Files\NURP.cpz File: C:\WinSLAMM Files\NURP.cp</pre>
-U# 2 - Residential: UNDETAINED 25 - Driveways 1: 0.032 ac. 31 - Sidewalks 1: 0.003 ac.	Total area (Connected Disconnected	ac): 0.163 Source Area PSD F Normal Clayey	≓ile: C:\WinSLAMM Low Density	Files\NURP.cpz Source Area PSD File: C:\WinS
<pre>=iles\NURP.cpz 32 - Sidewalks 2: 0.016 ac.</pre>	Disconnected	Normal Clayey	Low Density	Source Area PSD File: C:\WinS
<pre>-iles\NURP.cpz 51 - Small Landscaped Areas 1:</pre>	0.112 ac.	Normal Clayey	Source Area PSD	File: C:\WinSLAMM Files\NURP.cp

Control Practice 1: Isolator Row CP# 1 (DS) - ADS MC-4500 CHAMBER Page 1

```
2019-09-12 1545.00-WI West Building - InputData.txt
                                                                                                Available height from chamber base to surface (ft) = 8.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Control Practice 2: Upflo Filter CP# 1 (DS) - UpfloFilter
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          3.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Fraction of Area Served by Upflo Filters (0-1): 1.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Height from Outlet Invert to Structure Top (ft):
                                                                                                                                                                                                                               Sizing option: Number of rows and row length
                                                                                                                                                                Native soil infiltration rate (in/hr) = 0.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Overflow weir invert elevation (ft) = 3.00
                                   Total available system length (ft) = 35
                                                                  Total available system width (ft) = 30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Orifice 1 invert elevation (ft) = 0.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Orifice 1 diameter (ft) = 0.58
Orifice 2 invert elevation (ft) = 1.85
                                                                                                                                                                                                                                                                                                                                                                                                                                                               Chamber segment length (in): 48.30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         3765.6
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Total system length (ft): 96.0
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Total system width (ft): 27.3
                                                                                                                                                                                              Assumed stone porosity () = 0.40
                                                                                                                                                                                                                                                                                                                                                                                           Chamber height (in): 60.00
Chamber width (in): 109.00
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Final storage volume (cf):
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Orifice 2 diameter (ft) = 0.67
                                                                                                                                                                                                                                                                                                                                 Selected Chamber Information
                                                                                                                               Number of isolator rows = 1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Number of chambers: 21
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Row length (ft): 32.0
                                                                                                                                                                                                                                                                                                                                                               Chamber type: MC-4500
                                                                                                                                                                                                                                                                                              Row length ftf) = 32
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Number of rows: 3
                                                                                                                                                                                                                                                               Number of rows = 3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Media Type: CPZ
```

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Sump Cleaning/Filter Replacement is not considered during the model run
                                                                             Solve for Given Conditions
Sump Depth (ft): 1.50
                                                                                                                 Number of filters: 1
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Data file name: Z:\Projects\2018\1545.00-WI\DESIGN\SWMP\SLAMM\2019-09-12 1545.00-WI West Building.mdb Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std Other Urban 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 Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx >ollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GE003.ppdx 03/12 Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx End of Winter Season: Rain file name: C:\WinSLAMM Files\Rain Files\WI Milwaukee 69.RAN Model Run End Date: 12/31/69 10:51:15 Time of run: Industrial Street Delivery file name: -42 1.230 Seed for random number generator: Model Run Start Date: 01/05/69 Start of Winter Season: 12/02 fotal Area Modeled (acres): Date of run: 09-13-2019 Data file description: Cost Data file name:

Solids Particulate Solids Reduction 47.41% Percent Yield 233.3 236.6 443.6 Percent Particulate Particulate (lbs) 90.50 53.29 Solids (mg/L) Conc. Volume Runoff Reduction 10.68% 70139 71113 Runoff Volume 78524 (cu ft) Fotal of all Land Uses without Controls: Annualized Total After Outfall Controls: Outfall Total with Controls:

0.99

/ears in Model Run:



2019-09-12 1545.00-WI East Building - InputData.txt ^ojects\2018\1545.00-WI\DESIGN\SWMP\SLAMM\2019-09-12 1545.00-WI East Building.mdb .1	inSLAMM Files\Rain Files\WI Milwaukee 69.RAN ncentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx le name: C:\WinSLAMM Files\WI SL06 Dec06.rsvx	<pre>ivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std ivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std ivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std</pre>	LIVERY TILE NAME: C:\WINSLAMM FILES\WL_KES AND UTNER URDAN DEC06.STD Y file name: C:\WinSLAMM Files\Freeway Dec06.std Files to Adjust the After Event Load Street Dirt Mass Balance: False ncentration file name: C:\WinSLAMM Files\WI_GE003.ppdx eak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv	r generator: -42 date: 01/05/69 Study period ending date: 12/31/69 n: 12/02 End of Winter Season: 03/12 Time: 10:40:59	TO POND Total area (ac): 1.122 347 ac. Flat Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz ng 1: 0.298 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz : 0.037 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
2:\Projects\2018\1545.00-W 10.4.1	C:\WinSLAMM Files\Rain Fil ds Concentration file name: nt file name: C:\WinSLAMM	et Delivery file name: C:\W reet Delivery file name: C:\W t Delivery file name: C:\W t Delivery file name: C:\W	et Delivery file name: C:\/ elivery file name: C:\WinS ivery Files to Adjust the A ve Concentration file name: and Peak to Average Flow Ra	ame: number generator: -42 rting date: 01/05/69 Season: 12/02 9	ial: TO POND Total are : 0.347 ac. Flat Con Parking 1: 0.298 ac. Co lks 1: 0.037 ac. Connec
Data file name: WinSLAMM Version	Rain file name: Particulate Solic Runoff Coefficier	Residential Streed Institutional Streed Commercial Streed Industrial Streed	Otner Urban Stree Freeway Street De Apply Street Del: Pollutant Relativ Source Area PSD a	Cost Data file ni Seed for random 1 Study period stan Start of Winter 5 Date: 09-13-2015 Site information	LU# 1 - Resident: 1 - Roofs 1 13 - Paved F 31 - Sidewal

Sump Depth (ft): 1.50 Sump Cleaning/Filter Replacement is not considered during the model run Control Practice 1: Upflo Filter CP# 1 (DS) - UpfloFilter Media Type: CPZ Fraction of Area Served by Upflo Filters (0-1): 1.0 Height from Outlet Invert to Structure Top (ft): 3.0 Solve for Given Conditions Number of filters: 1

2019-09-12 1545.00-WI East Building vs Version 10.4.1	- Output Summary.txt	
Nopu	2019-09-12 1545.00-WI East Building	ndows Version 10.4.1

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SLAMM for

Data file name: Z:\Projects\2018\1545.00-WI\DESIGN\SWMP\SLAMM\2019-09-12 1545.00-WI East Building.mdb Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std Other Urban 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 Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx >ollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GE003.ppdx 03/12 Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx End of Winter Season: Rain file name: C:\WinSLAMM Files\Rain Files\WI Milwaukee 69.RAN Model Run End Date: 12/31/69 10:52:03 Time of run: -42 Seed for random number generator: Model Run Start Date: 01/05/69 Start of Winter Season: 12/02 Date of run: 09-13-2019 Data file description: Cost Data file name:

	183.5			58726	Annualized Total After Outfall Controls:
40.66%	181.0	50.07	-0.10%	57921	Outfall Total with Controls:
I	305.0	84.44	I	57861	Total of all Land Uses without Controls:
Reduction	(lbs)	(mg/L)	Reduction		
Solids	Yield	Conc.	Volume	(cu ft)	
Particulate	Solids	Solids	Runoff	Volume	
Percent	Particulate	Particulate	Percent	Runoff	

1.122

fotal Area Modeled (acres):

0.99

/ears in Model Run: