

Bakers Square

Erosion Control & Stormwater Management Report

849 E. Washington Ave. – Madison, WI 53703

Date: 5/4/2021
Project #71420

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I. Introduction

Project Contacts

Designer Contact Information:

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Owner Representative Information:

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Madison, WI 53703
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General Contractor Information:

No GC Selected at this time

Project Description

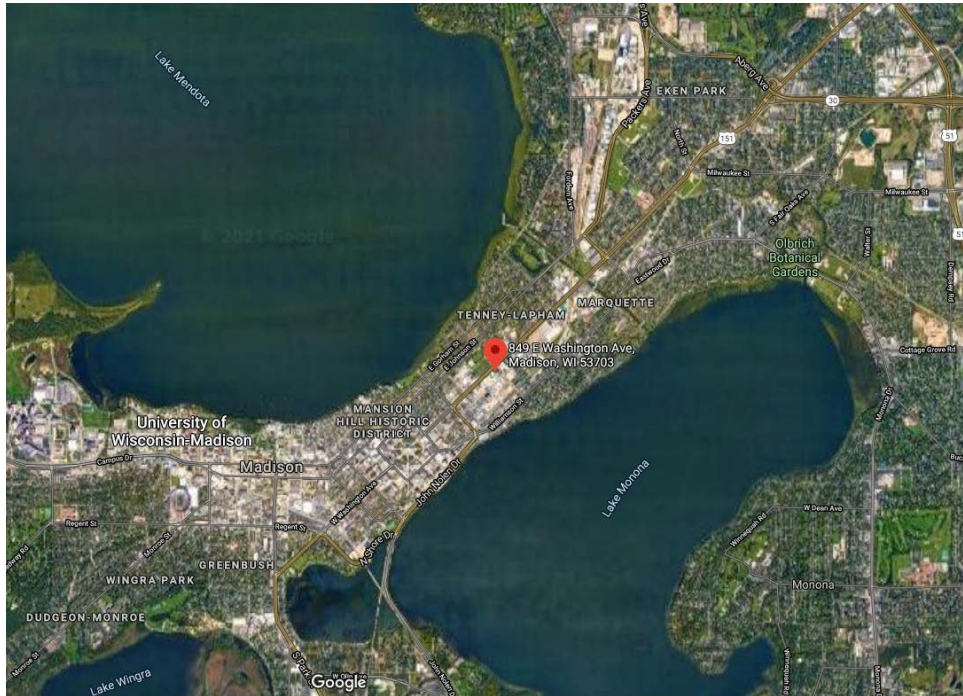
This project involves the redevelopment of an existing 1.0 acre property at 849 East Washington Avenue in the City of Madison, Wisconsin. A portion of the existing 2-3 story building fronting East Washington will remain, with the remainder of the site redeveloped as a new multi-story building with parking covered with building.

The land disturbance extents is approximately 1 acres. See below for a summary of proposed land coverage on the site:

BAKER'S PLACE DEVELOPMENT - SITE CALCULATIONS					
Total Property	43,644 sf	1.00 ac			
Address: 849 E Washington Ave					Parcel #070913410018
Zoning District:					TE - Traditional Employment District
Existing Site:					
Existing Buildings	21,349	sf	0.49	ac	
Existing Pavement	21,518	sf	0.49	ac	
Total Existing Impervious	42,867	sf	0.98	ac	98%
Remainder Greenspace	777	sf	0.02	ac	2%
Proposed Site:					
Existing and New Building (Including Elevated Green Roof Areas)	34,496	sf	0.79	ac	
New Pavement	7,353	sf	0.17	ac	
Total New & Existing Impervious	41,849	sf	0.96	ac	96%
Remainder Greenspace	1,795	sf	0.04	ac	4%
Vegetated Roof Greenspace (above ground level)	11,621	sf	0.27	ac	27%

Existing Site Evaluation

As shown in the aerial photo below, this site is located on the isthmus in between Lake Mendota and Lake Monona in the City of Madison. The site is bounded on the northwest by East Washington Avenue, the northeast by Paterson Street, the southeast by East Main Street, and the southwest is existing commercial development right to the property line.



The native onsite soils are classified as Colwood Silt Loam, but virtually 100% of this site is developed as building or pavement with likely fill underneath. A geotechnical report is in progress. This site is covered with either building or pavement, and will assume a Hydrologic Soil Group (HSG) classification of 'C' for pre- and post-development.

Refer to Appendix D for the USDA NRCS Soil Map.

II. Erosion Control Plan

Summary

The site will disturb approximately 0.94 acres (40,980 sf), and will adhere to NR 151.11 (6m) requirements (Register, December 2013, No. 689) and the City of Madison Chapter 37 'The Public Stormwater System Including Erosion Control,' as published on June 10, 2020.

Erosion and sediment control features will include:

- Prevent the discharge of sediment from disturbed areas into abutting waters of the state and off site by using a sediment log around perimeter by installing prior to land disturbing activity
- Prevent the discharge of sediment by dewatering activities, which will be accomplished by using a dewatering filter bag when dewatering and discharging the cleaned water in a safe manner.
- Prevent the discharge of sediment from soil being tracked onto streets by regularly removing any sediment tracked onto streets
- Prevent the discharge of runoff from the site from concrete washout zones by providing specific washout stations with regular maintenance as necessary

Note: See sheet C302 for additional information.

Erosion Control Facilities Maintenance

The General Contractor is to be determined. The GC shall be responsible for erosion and sediment control facilities on site during construction and leaving the site stabilized before handing off to Owner.

Special Note: The new building will comprise the entire property on the east side of the existing building to remain. The greenspace shown on the east side of the building is a green roof over the underground parking, which extends beyond the 1st floor footprint.

Schedule of maintenance and repairs

- A. Weekly inspections shall be performed to ensure that the erosion and sediment controls are performing properly.
- B. After every rainfall event exceeding 0.5 inches in depth or once a week, all erosion control features on the site shall be inspected.
- C. Inspections will observe the following, but are not be limited to:
 - Any erosion on slopes
 - Debris accumulation clogging the outlets
 - Any appreciable sediment accumulation in dry detention pond and infiltration pond
- D. Repair where needed (see below)

Maintenance and repairs to be completed

- All impervious road surfaces shall be cleaned prior to the end of each working day during construction.
- Repair any erosion in swales or on slopes with topsoil, seeding, and erosion control mat.
- Remove accumulated debris clogging outlets and at the bottom of storm sewer structures.
- Concrete washout areas shall be maintained and material disposed of in an approved manner.

Anticipated Project Schedule

The anticipated construction schedule for this project is as follows:

- January 3, 2022: Pre-development construction Meeting, Install erosion control measures (i.e. sediment logs, stone tracking pads, inlet protection in ROW) before land disturbing activity and construction demolition begins.
- During Construction: Maintain erosion and sediment control measures as necessary.
- May-June 2023: End of construction project, sod area in ROW.

III. Stormwater Management Plan

Design Requirements

This site is designed to meet the requirements of NR 151.121 'Post Construction Performance Standards (Register, December 2013, No. 689) and the City of Madison Chapter 37 'The Public Stormwater System Including Erosion Control,' as published on June 10, 2020. This site is considered a 'Redevelopment' site. The minimum stormwater requirements include:

- Total Suspended Solids Reduction: Rock River TDML Site Reduce to the MEP, TSS loads leaving the redeveloped site by 80% based on an average annual rainfall, as compared to existing conditions of the site prior to the proposed redevelopment; or 60% of all new exposed parking areas as compared to no controls.
- Oil & Grease Control: Not applicable (parking covered by building).
- Peak Discharge Performance Standard:
 - Redevelopment site:
 - Reduce peak runoff rates from site by 15% compared to existing conditions during a 10-year storm event.
 - Reduce peak runoff volumes from site by 5% compared to existing conditions during a 10-year storm event.
 - The required rate and volume reductions shall be completed using green infrastructure that captures at least the first ½ inch of rainfall over the total site impervious area. If additional stormwater controls are necessary beyond the first ½ inch of rainfall, either green or non-green infrastructure may be used.
 - Following guidance to be used:
 - Extensive green roof with a media depth of min. 4" shall have a CN of 76
- Flood Prone Watersheds: This site is located in the East Isthmus Watershed area. City Engineering has provided that the minimum entrance elevation for underground parking and all entrances must be 852.00.
 - Analysis of stormwater drainage conveyance system for the area as it relates to the proposed new building shall be provided. Compare the proposed conditions discharge to the existing to demonstrate not exceeding discharge into system.
- Infiltration: Redevelopment Site not applicable.

Design Results

Total Suspended Solids Reduction

The treatment of stormwater on the site is provided through vegetated roofs on 27% of the site (excluding the ground level green "roof"). The existing roof does not have any treatment, as well as the ground level sidewalks and driveway (which are over the underground parking area). The site was modeled using WinSLAMM v10.1.0. The below are the inputs for existing conditions:

Existing Site:					
Existing Buildings	21,349	sf	0.49	ac	
Existing Pavement	21,518	sf	0.49	ac	
<i>Total Existing Impervious</i>	42,867	sf	0.98	ac	98%
<i>Remainder Greenspace</i>	777	sf	0.02	ac	2%

The proposed post-development input areas to compare to existing conditions are:

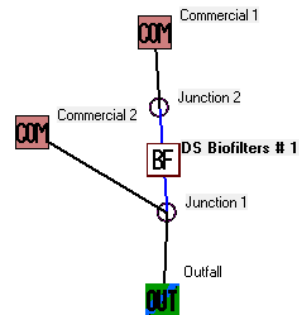
Post-Development Areas:

Proposed Conditions:		sf	ac	CN
existing building		5,677	0.130	98
new building no green roof		17,198	0.395	98
new building vegetated		11,621	0.267	76
at grade vegetated roof		1,795	0.041	76
driveway		552	0.013	98
walkways		6,801	0.156	98
	total area:		1.002	

The green roof areas were modeled collectively as one biofilter with 6" depth engineered soil providing 80% TSS reduction. Below is a view of the diagram and biofilter inputs:

Control Practice:
DS Biofilters # 1

Land Use #	Land Use Type	Land Use Label	Land Use Area (acres)
1	Commercial	Commercial 1	0.703
2	Commercial	Commercial 2	0.299



Biofiltration Control Device

Drainage System Control Practice

Device Properties

Top Area (sf)	11977
Bottom Area (sf)	11977
Total Depth (ft)	0.75
Typical Width (ft) (Cost est. only)	10.00
Native Soil Infiltration Rate (in/hr)	0.000
Native Soil Infiltration Rate COV	N/A
Infil. Rate Fraction-Bottom (0.001-1)	1.000
Infil. Rate Fraction-Sides (0.001-1)	0.001
Rock Filled Depth (ft)	0.00
Rock Fill Porosity (0-1)	0.00
Engineered Media Type	Media Data
Engineered Media Infiltration Rate	3.60
Engineered Media Infiltration Rate COV	N/A
Engineered Media Depth (ft)	0.50
Engineered Media Porosity (0-1)	0.27
Percent solids reduction due to Engineered Media (0-100)	80.00
Inflow Hydrograph Peak to Average Flow Ratio	3.80
Number of Devices in Source Area or Upstream Drainage System	1

☐ Activate Pipe or Box Storage ☐ Pipe ☐ Box

Diameter (ft) _____
Length (ft) _____
Within Biofilter (check if Yes) ☐
Perforated (check if Yes) ☐
Bottom Elevation (ft above datum) _____
Discharge Orifice Diameter (ft) _____

Select Native Soil Infiltration Rate

<input type="radio"/> Sand - 8 in/hr	<input type="radio"/> Clay loam - 0.1 in/hr
<input type="radio"/> Loamy sand - 2.5 in/hr	<input type="radio"/> Silty clay loam - 0.05 in/hr
<input type="radio"/> Sandy loam - 1.0 in/hr	<input type="radio"/> Sandy clay - 0.05 in/hr
<input type="radio"/> Loam - 0.5 in/hr	<input type="radio"/> Silty clay - 0.04 in/hr
<input type="radio"/> Silt loam - 0.3 in/hr	<input type="radio"/> Clay - 0.02 in/hr
<input type="radio"/> Sandy silt loam - 0.2 in/hr	<input type="radio"/> Rain Barrel/Cistern - 0.00 in/hr

☐ Use Random Number Generation to Account for Infiltration Rate Uncertainty

Estimated Surface Drain Time = 0.67 hrs.

Control Practice #: 1 CP Index #: 1

Add Sharp Crested Weir

Weir Length (ft)	
Height from datum to bottom of weir opening (ft)	

Broad Crested Weir-Reqd

Weir crest length (ft) 5.00
Weir crest width (ft) 5.00
Height from datum to bottom of weir opening (ft) 0.70

Add Vertical Stand Pipe

Pipe diameter (ft)	
Height above datum (ft)	

Add Surface Discharge Pipe

Pipe Diameter (ft)	
Invert elevation above datum (ft)	
Number of pipes at invert elev.	

Drain Tile/Underdrain

Pipe Diameter (ft)	0.33
Invert elevation above datum (ft)	0.01
Number of pipes at invert elev.	6

Add Other Outlet

Stage Number	Stage (ft)	Other Outflow Rate (cfs)
1		
2		
3		
4		
5		

Add Evapotranspiration

Soil porosity (saturation moisture content, 0-1)	
Soil field moisture capacity (0-1)	
Permanent wilting point (0-1)	
Supplemental irrigation used?	<input type="checkbox"/>
Fraction of available capacity when irrigation starts (0-1)	
Fraction of available capacity when irrigation stops (0-1)	

Evaporation

Month	Evapotranspiration (in/day)	Evaporation (in/day)
Jan		
Feb		
Mar		
Apr		
May		
Jun		
Jul		
Aug		
Sep		
Oct		
Nov		
Dec		

Plant Types

	1	2	3	4
Fraction of biofilter that is vegetated				
Plant type				
Root depth (ft)				
ET Crop Adjustment Factor				

Biofilter Geometry Schematic

Press 'F1' for Help

Comparing the existing conditions to the proposed conditions with the green roof areas provides a **74% reduction**, which we believe is to the maximum extent practicable on site. This does not take into account the 24" depth planters on site. The limitations of modeling green roofs in WinSLAMM makes this value approximate. See below for summary of reduction:

TSS Reduction Compared to Existing Conditions	Particulate Solids Yield (lbs.)	TSS Reduction
Existing Conditions TSS	385.3	100%
Post-development TSS	156.8	59%
Post-development with controls	100.5	74%

Peak Discharge Control

The peak discharge rates and volumes for the 10-year storm events do not exceed the predevelopment rates, as noted in the summary below.

849 E Washington - Bakers Place

Peak Discharge Rates

	10-Year Runoff Rate	Required 15% Reduction of Runoff Rate of 10-Year Storm cfs	10-Year Runoff Volume	Required 5% Reduction of Runoff Volume of 10-Year Storm
Predevelopment	6.67 cfs	5.6695 cfs	13,606 cf	12,926 cf
New Development - without control	6.18 cfs		11,288 cf	
New Development - with roof on-site detention	1.57 cfs		11,288 cf	

In addition, the first ½ of rainfall needs to be captured for the entire site impervious area, which is demonstrated in the below summary:

Capture first 1/2" of rainfall over total site impervious area:

Total Site Impervious Area: 41,849 sf
 Required Volume to Capture: **1,744 cf first 1/2" rainfall volume**

Green Roof Volumes (Storage Volume as Provided by Hanging Gardens):

Green Roof Zone:	Area sf	Retention with Roof Pitch 0-5 Degrees	g/sf	Retention in gallons	ga	Retention in cubic feet	cf
Central Bermed 8-31" Intensive green roof, 3rd Floor	2,026 sf	8.7	g/sf	17,626	ga	2,356	cf
6" Perimeter Intensive green roof (9th and 11th floors)	5,391 sf	1.6	g/sf	8,626	ga	1,153	cf
8" Perimeter Intensive green roof (Ground, 3rd and 4th floors)	4,560 sf	2.25	g/sf	10,260	ga	1,371	cf
Total Captured Rainfall Volume:	11,977 sf			36,512	ga	4,881	cf

Storm water peak discharge was analyzed using HydroCAD v.10.00-20, which uses the SCS TR-55 and TR-20 methodologies. HydroCAD also uses the Storage-Indication method for pond routing, with an analysis of time up to 72 hours after start of rainfall event. See Appendix B for HydroCAD stormwater modeling.

Conveyance System Capacity

The existing stormwater discharges to the public stormwater system do not exceed the existing discharges, as demonstrated in the above peak discharge requirements. The green roof areas provide approximately 4,881 CF of stormwater volume, in addition to the reduction in impervious coverage on site.

IV. Certification Statement

I certify under penalty of law that this document and attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information contained in the plan. Based on my inquiry of the person, or persons, who manage the system, or those persons directly responsible for gathering the information; the information contained in this document is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for providing false information, including the possibility of fine and imprisonment. In addition, I certify under penalty of law that, based upon inquiry of persons directly under my supervision, to the best of my knowledge and belief, the provisions of this document adhere to the provisions of the storm water permit for the development and implementation of an Erosion Control and Stormwater Management Plan and that the plan will be complied with.



5/4/2021

(Signature of Plan Preparer)

(Date)

Katie Udell

Landscape Architect

(Printed Name)

(Title)

(Signature of Owner)

(Date)

Nate Helbach

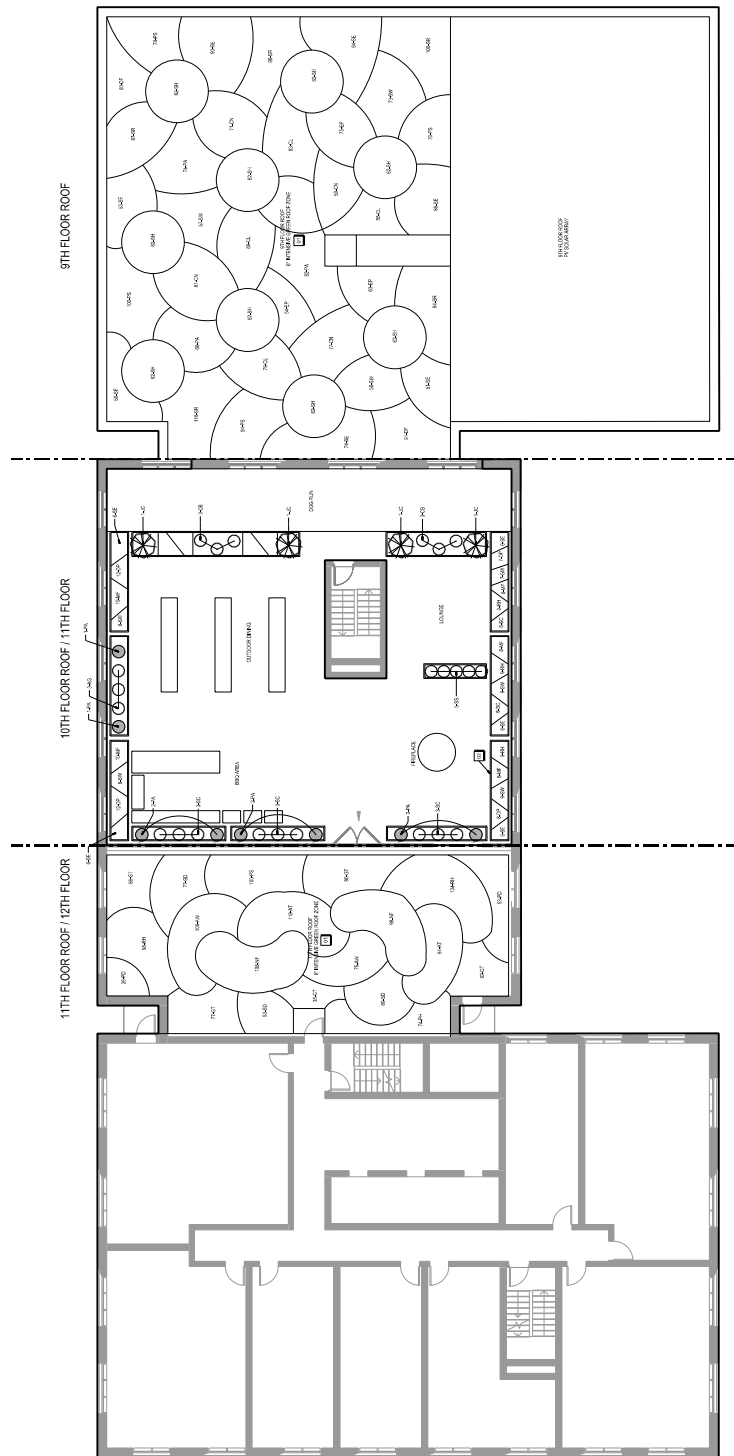
(Printed Name)

(Title)

Appendix A: Existing and Proposed Development Maps



SYMBOL	SYMBOL NAME	COMMON NAME	INITIALLED DATE	ROOT	APPROX. SIZE
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9
10	10	10	10	10	10
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84	84	84	84	84	84
85	85	85	85	85	85



KEYNOTES

001	OF INTENSIVE GREEN ROOF SYSTEM
002	OF HIGH PRESSURE TREATED STEEL PLANTERS, TYP.

LANDSCAPE DESIGN BY:
BRYAN J. JONES, PRESIDENT/DESIGNER
AND KATE WELLS, ASST. ASLA

PRELIMINARY - NOT FOR CONSTRUCTION

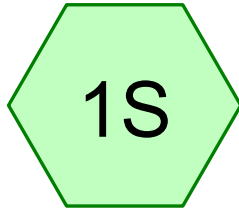
Appendix B: Stormwater Modeling Information

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WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Madison WI 1981.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/01/81 Study period ending date: 12/31/81
Start of Winter Season: 12/02 End of Winter Season: 03/12
Model Run Start Date: 01/01/81 Model Run End Date: 12/31/81
Date of run: 05-04-2021 Time of run: 11:42:06
Total Area Modeled (acres): 1.002
Years in Model Run: 1.00

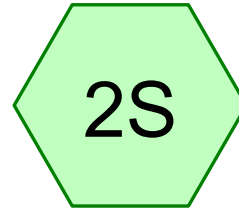
	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	76675	-	80.49	385.3	-
Outfall Total with Controls:	76676	0.00%	80.49	385.3	0.00%
Annualized Total After Outfall Controls:	76886			386.3	

Data file name: X:\71420\data\03.dd\Site\Stormwater\71420mi_WinSLAMM-v1.mdb
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Madison WI 1981.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdX
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/01/81 Study period ending date: 12/31/81
Start of Winter Season: 12/02 End of Winter Season: 03/12
Model Run Start Date: 01/01/81 Model Run End Date: 12/31/81
Date of run: 05-04-2021 Time of run: 11:57:54
Total Area Modeled (acres): 1.002
Years in Model Run: 1.00

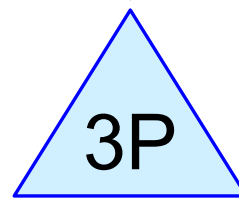
	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	55547	-	45.23	156.8	-
Outfall Total with Controls:	55524	0.04%	28.99	100.5	35.91%
Annualized Total After Outfall Controls:	55677			100.8	



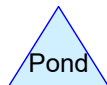
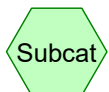
Predevelopment
Conditions



Proposed Conditions



Green Roof



71420ca-HydroCAD-v1

Prepared by Microsoft

Printed 5/4/2021

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Page 2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
1,795	76	at grade vegetated roof or planter (2S)
5,677	98	existing building (2S)
777	61	greenspace (1S)
17,198	98	new building not green roof (2S)
11,621	76	new building vegetated roof (2S)
28,871	98	pavement (1S, 2S)
21,349	98	roof (1S)
87,288	94	TOTAL AREA

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Page 3

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
0	HSG D	
87,288	Other	1S, 2S
87,288		TOTAL AREA

71420ca-HydroCAD-v1

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Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	0	0	0	1,795	1,795	at grade
						vegetated roof or planter
0	0	0	0	5,677	5,677	existing building
0	0	0	0	777	777	greenspace
0	0	0	0	17,198	17,198	new building not green roof
0	0	0	0	11,621	11,621	new building vegetated roof
0	0	0	0	28,871	28,871	pavement
0	0	0	0	21,349	21,349	roof
0	0	0	0	87,288	87,288	TOTAL AREA

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71420 Bakers Place-v1

Type II 24-hr 10-Year Rainfall=4.09"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

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

Subcatchment 1S: Predevelopment

Runoff Area=43,644 sf 98.22% Impervious Runoff Depth=3.74"

Flow Length=64' Slope=0.0100 '/' Tc=1.2 min CN=97 Runoff=6.67 cfs 13,606 cf

Subcatchment 2S: Proposed Conditions

Runoff Area=43,644 sf 69.26% Impervious Runoff Depth=3.10"

Flow Length=35' Slope=0.0100 '/' Tc=0.7 min CN=91 Runoff=6.18 cfs 11,288 cf

Pond 3P: Green Roof

Peak Elev=0.39' Storage=3,771 cf Inflow=6.18 cfs 11,288 cf

Outflow=1.57 cfs 11,288 cf

Total Runoff Area = 87,288 sf Runoff Volume = 24,893 cf Average Runoff Depth = 3.42"
16.26% Pervious = 14,193 sf 83.74% Impervious = 73,095 sf

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Type II 24-hr 10-Year Rainfall=4.09"

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Summary for Subcatchment 1S: Predevelopment Conditions

Runoff = 6.67 cfs @ 11.91 hrs, Volume= 13,606 cf, Depth= 3.74"

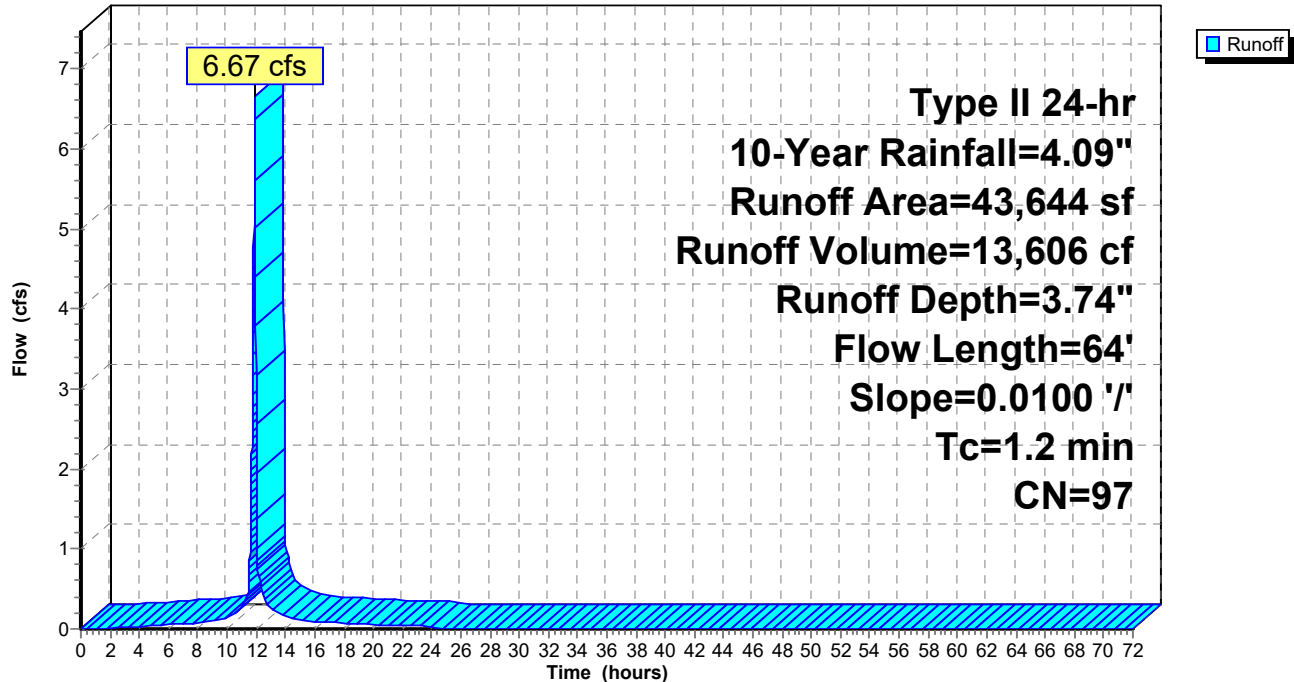
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=4.09"

	Area (sf)	CN	Description
*	21,349	98	roof
*	21,518	98	pavement
*	777	61	greenspace
	43,644	97	Weighted Average
	777		1.78% Pervious Area
	42,867		98.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	64	0.0100	0.90		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.84"

Subcatchment 1S: Predevelopment Conditions

Hydrograph



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Type II 24-hr 10-Year Rainfall=4.09"

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Hydrograph for Subcatchment 1S: Predevelopment Conditions

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.09	3.74	0.00
1.00	0.04	0.00	0.00	53.00	4.09	3.74	0.00
2.00	0.09	0.00	0.01	54.00	4.09	3.74	0.00
3.00	0.14	0.02	0.02	55.00	4.09	3.74	0.00
4.00	0.20	0.04	0.03	56.00	4.09	3.74	0.00
5.00	0.26	0.08	0.04	57.00	4.09	3.74	0.00
6.00	0.33	0.12	0.05	58.00	4.09	3.74	0.00
7.00	0.40	0.18	0.06	59.00	4.09	3.74	0.00
8.00	0.49	0.25	0.07	60.00	4.09	3.74	0.00
9.00	0.60	0.34	0.11	61.00	4.09	3.74	0.00
10.00	0.74	0.47	0.15	62.00	4.09	3.74	0.00
11.00	0.96	0.67	0.27	63.00	4.09	3.74	0.00
12.00	2.71	2.37	1.96	64.00	4.09	3.74	0.00
13.00	3.16	2.81	0.25	65.00	4.09	3.74	0.00
14.00	3.35	3.01	0.15	66.00	4.09	3.74	0.00
15.00	3.49	3.15	0.12	67.00	4.09	3.74	0.00
16.00	3.60	3.25	0.09	68.00	4.09	3.74	0.00
17.00	3.69	3.34	0.08	69.00	4.09	3.74	0.00
18.00	3.77	3.42	0.07	70.00	4.09	3.74	0.00
19.00	3.84	3.49	0.06	71.00	4.09	3.74	0.00
20.00	3.89	3.55	0.05	72.00	4.09	3.74	0.00
21.00	3.95	3.60	0.05				
22.00	4.00	3.65	0.05				
23.00	4.04	3.70	0.05				
24.00	4.09	3.74	0.05				
25.00	4.09	3.74	0.00				
26.00	4.09	3.74	0.00				
27.00	4.09	3.74	0.00				
28.00	4.09	3.74	0.00				
29.00	4.09	3.74	0.00				
30.00	4.09	3.74	0.00				
31.00	4.09	3.74	0.00				
32.00	4.09	3.74	0.00				
33.00	4.09	3.74	0.00				
34.00	4.09	3.74	0.00				
35.00	4.09	3.74	0.00				
36.00	4.09	3.74	0.00				
37.00	4.09	3.74	0.00				
38.00	4.09	3.74	0.00				
39.00	4.09	3.74	0.00				
40.00	4.09	3.74	0.00				
41.00	4.09	3.74	0.00				
42.00	4.09	3.74	0.00				
43.00	4.09	3.74	0.00				
44.00	4.09	3.74	0.00				
45.00	4.09	3.74	0.00				
46.00	4.09	3.74	0.00				
47.00	4.09	3.74	0.00				
48.00	4.09	3.74	0.00				
49.00	4.09	3.74	0.00				
50.00	4.09	3.74	0.00				
51.00	4.09	3.74	0.00				

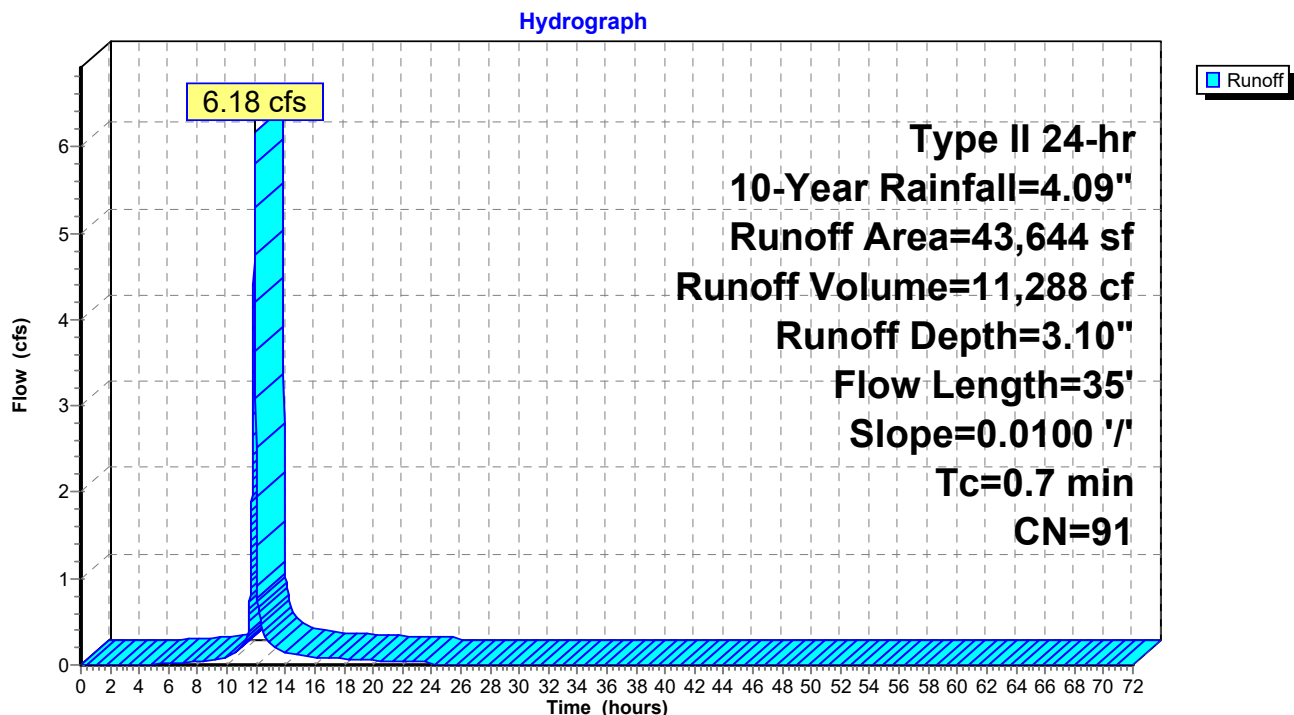
Summary for Subcatchment 2S: Proposed Conditions[49] Hint: $T_c < 2dt$ may require smaller dt

Runoff = 6.18 cfs @ 11.91 hrs, Volume= 11,288 cf, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, $dt=0.01$ hrs
Type II 24-hr 10-Year Rainfall=4.09"

	Area (sf)	CN	Description
*	5,677	98	existing building
*	17,198	98	new building not green roof
*	11,621	76	new building vegetated roof
*	7,353	98	pavement
*	1,795	76	at grade vegetated roof or planter
	43,644	91	Weighted Average
	13,416		30.74% Pervious Area
	30,228		69.26% Impervious Area

T_c (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	35	0.0100	0.80		Sheet Flow, Smooth surfaces $n=0.011$ $P2=2.84"$

Subcatchment 2S: Proposed Conditions

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Type II 24-hr 10-Year Rainfall=4.09"

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Hydrograph for Subcatchment 2S: Proposed Conditions

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	52.00	4.09	3.10	0.00
1.00	0.04	0.00	0.00	53.00	4.09	3.10	0.00
2.00	0.09	0.00	0.00	54.00	4.09	3.10	0.00
3.00	0.14	0.00	0.00	55.00	4.09	3.10	0.00
4.00	0.20	0.00	0.00	56.00	4.09	3.10	0.00
5.00	0.26	0.00	0.01	57.00	4.09	3.10	0.00
6.00	0.33	0.01	0.02	58.00	4.09	3.10	0.00
7.00	0.40	0.04	0.03	59.00	4.09	3.10	0.00
8.00	0.49	0.07	0.04	60.00	4.09	3.10	0.00
9.00	0.60	0.12	0.07	61.00	4.09	3.10	0.00
10.00	0.74	0.19	0.10	62.00	4.09	3.10	0.00
11.00	0.96	0.33	0.20	63.00	4.09	3.10	0.00
12.00	2.71	1.80	1.38	64.00	4.09	3.10	0.00
13.00	3.16	2.22	0.24	65.00	4.09	3.10	0.00
14.00	3.35	2.40	0.15	66.00	4.09	3.10	0.00
15.00	3.49	2.53	0.12	67.00	4.09	3.10	0.00
16.00	3.60	2.64	0.09	68.00	4.09	3.10	0.00
17.00	3.69	2.72	0.08	69.00	4.09	3.10	0.00
18.00	3.77	2.79	0.07	70.00	4.09	3.10	0.00
19.00	3.84	2.86	0.06	71.00	4.09	3.10	0.00
20.00	3.89	2.92	0.05	72.00	4.09	3.10	0.00
21.00	3.95	2.97	0.05				
22.00	4.00	3.01	0.05				
23.00	4.04	3.06	0.05				
24.00	4.09	3.10	0.04				
25.00	4.09	3.10	0.00				
26.00	4.09	3.10	0.00				
27.00	4.09	3.10	0.00				
28.00	4.09	3.10	0.00				
29.00	4.09	3.10	0.00				
30.00	4.09	3.10	0.00				
31.00	4.09	3.10	0.00				
32.00	4.09	3.10	0.00				
33.00	4.09	3.10	0.00				
34.00	4.09	3.10	0.00				
35.00	4.09	3.10	0.00				
36.00	4.09	3.10	0.00				
37.00	4.09	3.10	0.00				
38.00	4.09	3.10	0.00				
39.00	4.09	3.10	0.00				
40.00	4.09	3.10	0.00				
41.00	4.09	3.10	0.00				
42.00	4.09	3.10	0.00				
43.00	4.09	3.10	0.00				
44.00	4.09	3.10	0.00				
45.00	4.09	3.10	0.00				
46.00	4.09	3.10	0.00				
47.00	4.09	3.10	0.00				
48.00	4.09	3.10	0.00				
49.00	4.09	3.10	0.00				
50.00	4.09	3.10	0.00				
51.00	4.09	3.10	0.00				

Summary for Pond 3P: Green Roof

Inflow Area = 43,644 sf, 69.26% Impervious, Inflow Depth = 3.10" for 10-Year event
 Inflow = 6.18 cfs @ 11.91 hrs, Volume= 11,288 cf
 Outflow = 1.57 cfs @ 12.00 hrs, Volume= 11,288 cf, Atten= 75%, Lag= 5.3 min
 Primary = 1.57 cfs @ 12.00 hrs, Volume= 11,288 cf

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 0.39' @ 12.00 hrs Surf.Area= 0 sf Storage= 3,771 cf

Plug-Flow detention time= 39.0 min calculated for 11,286 cf (100% of inflow)

Center-of-Mass det. time= 39.1 min (824.6 - 785.5)

Volume	Invert	Avail.Storage	Storage Description
#1	0.00'	4,881 cf	Custom Stage Data Listed below

Elevation (feet)	Cum.Store (cubic-feet)
0.00	0
0.50	4,881

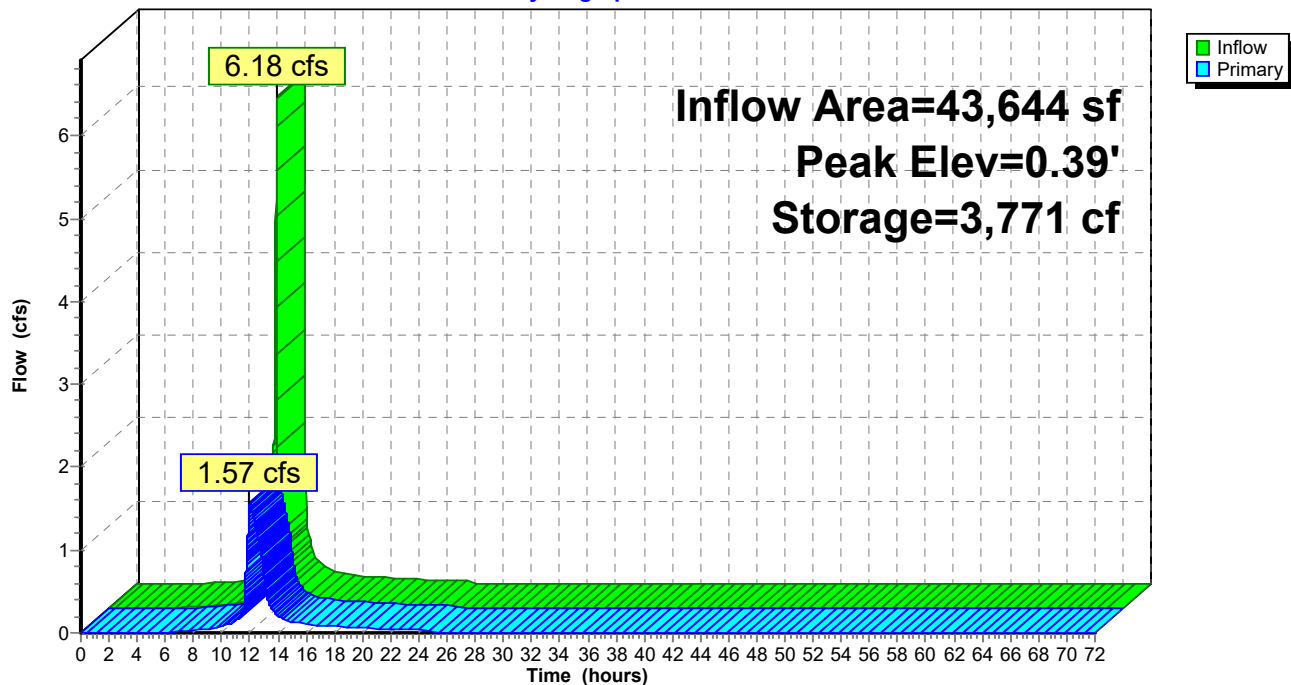
Device	Routing	Invert	Outlet Devices
#1	Primary	0.00'	4.0" Horiz. Orifice/Grate X 6.00 C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.57 cfs @ 12.00 hrs HW=0.39' (Free Discharge)

↑ **1=Orifice/Grate** (Orifice Controls 1.57 cfs @ 2.99 fps)

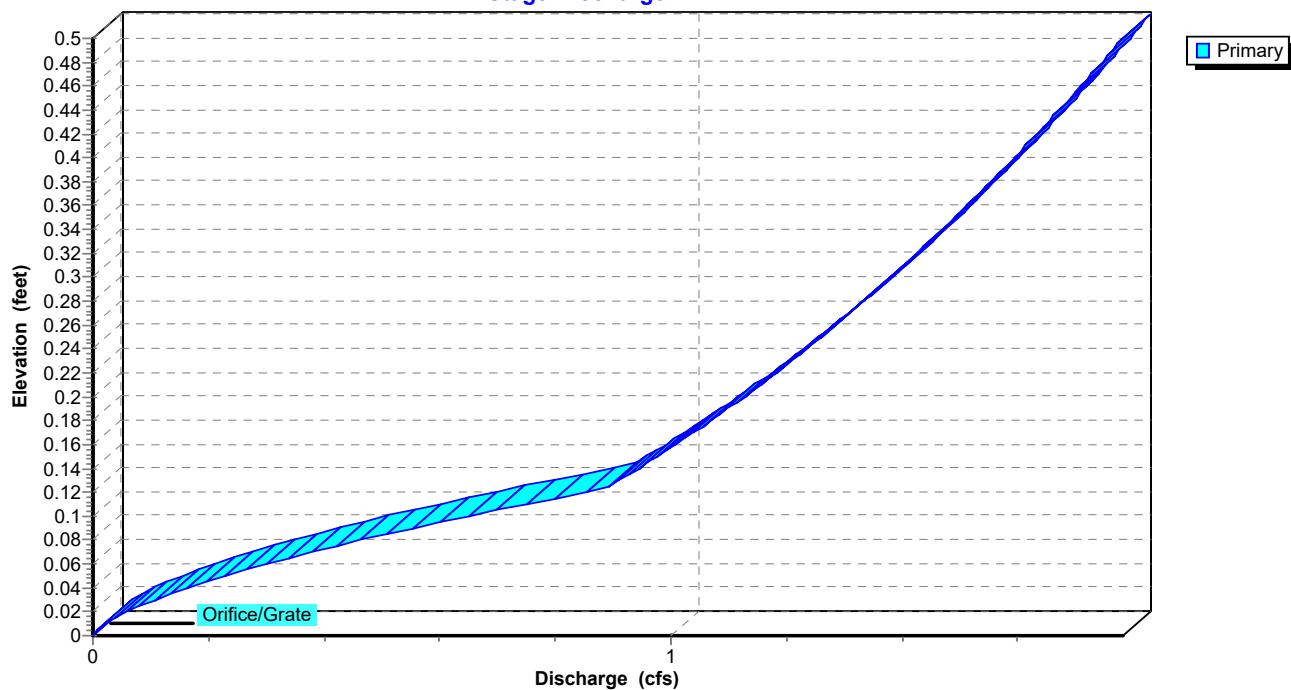
Pond 3P: Green Roof

Hydrograph



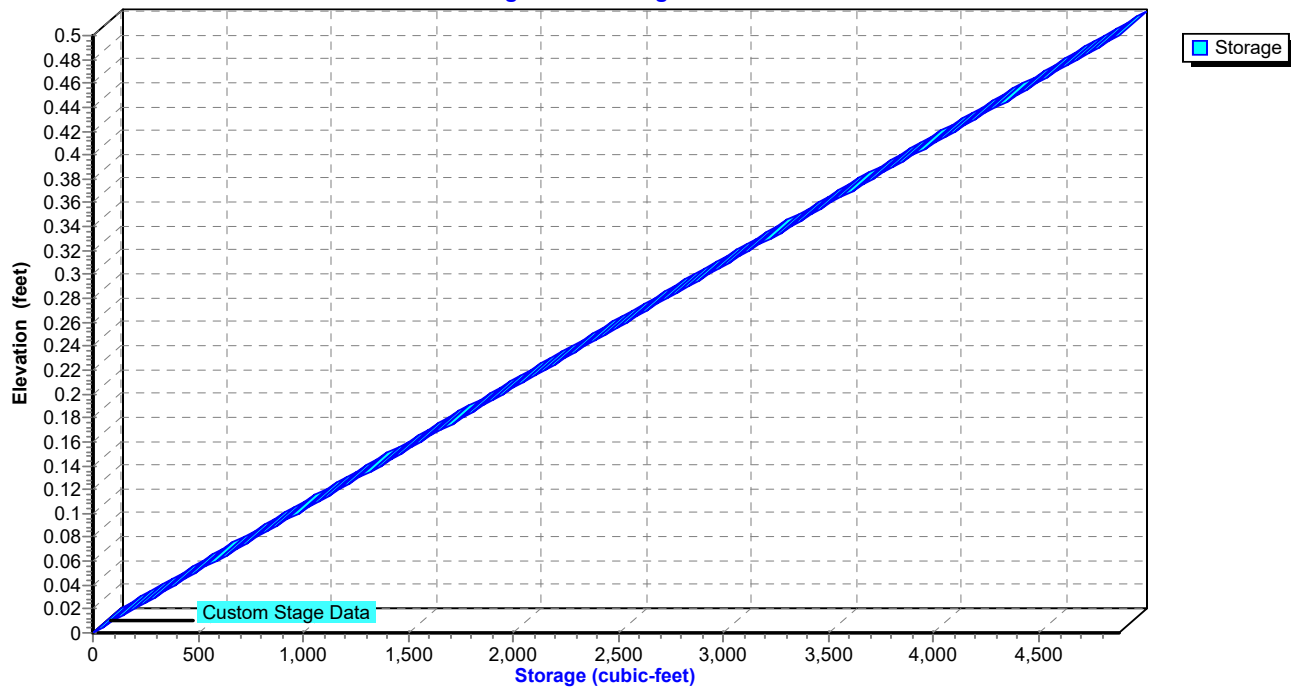
Pond 3P: Green Roof

Stage-Discharge



Pond 3P: Green Roof

Stage-Area-Storage



Hydrograph for Pond 3P: Green Roof

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	0.00	0.00
2.00	0.00	0	0.00	0.00
4.00	0.00	0	0.00	0.00
6.00	0.02	39	0.00	0.01
8.00	0.04	116	0.01	0.03
10.00	0.10	228	0.02	0.07
12.00	1.38	3,770	0.39	1.57
14.00	0.15	445	0.05	0.20
16.00	0.09	288	0.03	0.10
18.00	0.07	234	0.02	0.08
20.00	0.05	193	0.02	0.06
22.00	0.05	173	0.02	0.05
24.00	0.04	164	0.02	0.04
26.00	0.00	41	0.00	0.01
28.00	0.00	14	0.00	0.00
30.00	0.00	5	0.00	0.00
32.00	0.00	2	0.00	0.00
34.00	0.00	1	0.00	0.00
36.00	0.00	0	0.00	0.00
38.00	0.00	0	0.00	0.00
40.00	0.00	0	0.00	0.00
42.00	0.00	0	0.00	0.00
44.00	0.00	0	0.00	0.00
46.00	0.00	0	0.00	0.00
48.00	0.00	0	0.00	0.00
50.00	0.00	0	0.00	0.00
52.00	0.00	0	0.00	0.00
54.00	0.00	0	0.00	0.00
56.00	0.00	0	0.00	0.00
58.00	0.00	0	0.00	0.00
60.00	0.00	0	0.00	0.00
62.00	0.00	0	0.00	0.00
64.00	0.00	0	0.00	0.00
66.00	0.00	0	0.00	0.00
68.00	0.00	0	0.00	0.00
70.00	0.00	0	0.00	0.00
72.00	0.00	0	0.00	0.00

Stage-Discharge for Pond 3P: Green Roof

Elevation (feet)	Primary (cfs)
0.00	0.00
0.01	0.02
0.02	0.06
0.03	0.11
0.04	0.16
0.05	0.23
0.06	0.30
0.07	0.38
0.08	0.46
0.09	0.55
0.10	0.65
0.11	0.75
0.12	0.85
0.13	0.91
0.14	0.94
0.15	0.98
0.16	1.01
0.17	1.04
0.18	1.07
0.19	1.10
0.20	1.13
0.21	1.16
0.22	1.18
0.23	1.21
0.24	1.24
0.25	1.26
0.26	1.29
0.27	1.31
0.28	1.33
0.29	1.36
0.30	1.38
0.31	1.40
0.32	1.43
0.33	1.45
0.34	1.47
0.35	1.49
0.36	1.51
0.37	1.53
0.38	1.55
0.39	1.57
0.40	1.59
0.41	1.61
0.42	1.63
0.43	1.65
0.44	1.67
0.45	1.69
0.46	1.71
0.47	1.73
0.48	1.75
0.49	1.76
0.50	1.78

Stage-Area-Storage for Pond 3P: Green Roof

Elevation (feet)	Storage (cubic-feet)
0.00	0
0.01	98
0.02	195
0.03	293
0.04	390
0.05	488
0.06	586
0.07	683
0.08	781
0.09	879
0.10	976
0.11	1,074
0.12	1,171
0.13	1,269
0.14	1,367
0.15	1,464
0.16	1,562
0.17	1,660
0.18	1,757
0.19	1,855
0.20	1,952
0.21	2,050
0.22	2,148
0.23	2,245
0.24	2,343
0.25	2,441
0.26	2,538
0.27	2,636
0.28	2,733
0.29	2,831
0.30	2,929
0.31	3,026
0.32	3,124
0.33	3,221
0.34	3,319
0.35	3,417
0.36	3,514
0.37	3,612
0.38	3,710
0.39	3,807
0.40	3,905
0.41	4,002
0.42	4,100
0.43	4,198
0.44	4,295
0.45	4,393
0.46	4,491
0.47	4,588
0.48	4,686
0.49	4,783
0.50	4,881

Appendix C: Stormwater Operations & Maintenance Plan and Agreement

DECLARATION OF CONDITIONS, COVENANTS AND RESTRICTIONS
FOR MAINTENANCE OF STORMWATER MANAGEMENT MEASURES

RECITALS:

- A. Bakers Place LLC, is the owner of 849 E Washington Ave,
Being parcels A, B and C noted below:
PARCEL A (TAX ID: 251-0709-134-1001-8)
Part of Lot 7, Block 144, Original Plat of Madison, in the City of Madison, Dane County, Wisconsin, described as follows:
Commencing at the North corner of said Lot 7; thence Southeasterly along the Northeasterly line of said Lot 7 to the East corner thereof; thence Southwesterly along the Southeasterly line of said Lot 7, 1.75 inches; thence Northwesterly to a point on the Northwesterly line of said Lot 7 that is 1.5 inches Southwesterly of the North corner thereof; thence Northeasterly along said Northwesterly line 1.5 inches to the point of beginning.
PARCEL B (TAX ID: 251-0709-134-1001-8)
Lots 8, 9 and 11, Block 144, Original Plat of Madison, in the City of Madison, Dane County, Wisconsin, EXCEPT lands conveyed in Warranty Deed recorded as Document No. 3858958; Affidavit of Correction recorded on May 28, 2004, as Document No. 3920530.
PARCEL C (TAX ID: 251-0709-134-1014-1)
Lot 10, Block 144, Original Plat of the City of Madison, in the City of Madison, Dane County, Wisconsin.
Hereafter called (“Property”).

- B. Owner desires to construct expanded parking facilities on the Property in accordance with certain plans and specifications approved by the City.
- C. The City requires Owner to record this Declaration regarding maintenance of stormwater management measures to be located on the Property. Owner agrees to maintain the stormwater management measures and to grant to the City the rights set forth below.

NOW, THEREFORE, in consideration of the declarations herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the owner agrees as follows:

1. Maintenance. Owner and its successors and assigns shall be responsible to repair and maintain the stormwater management measures located on the Property in good condition and in working order and such that the measures comply with the approved plans on file with the City Engineer. Said maintenance shall be at the Owner’s sole cost and expense. Owner will conduct such maintenance or repair work in accordance with all applicable laws, codes, regulations, and similar requirements, and pursuant to the Maintenance Provisions attached hereto as Exhibit A.
2. Easement to City. If Owner fails to maintain the stormwater management measures as required in Section 1, then City shall have the right, after providing Owner with written notice of the maintenance issue (“Maintenance Notice”) and thirty (30) days to comply with the City’s maintenance request, to enter the Property in order to conduct the maintenance specified in the Maintenance Notice. City will conduct such maintenance work in accordance with all applicable laws, codes, regulations, and similar requirements and will not unreasonably interfere with Owner’s use of the Property. All costs and expenses incurred by the City in conducting such maintenance may be charged to the owner of the Property by placing the amount on the tax roll for the Property as a special charge in accordance with Section 66.0627, Wis. Stats. and Section 4.09 of the Madison General Ordinances.
3. Term/Termination. The term of this Agreement shall commence on the date that this Agreement is filed of record with the Register of Deeds Office for Dane County, Wisconsin, and except as otherwise herein specifically provided, shall continue in perpetuity. Notwithstanding the foregoing, this Agreement may be terminated by recording with the Register of Deeds Office for Dane County, Wisconsin, a written instrument of termination signed by the City and all of the then-owners of the Property.
4. Miscellaneous.
- (a) Notices. Any notice, request or demand required or permitted under this Agreement shall be in writing and shall be deemed given when personally served or three (3) days after the same has been deposited with the United States Post Office, registered or certified mail, return receipt requested, postage prepaid and addressed as follows:

If to Owner: Bakers Place LLC
533 W. Main Street #109
Madison, WI 53703
Attention: Nate Helbach

If to City: City Engineering Division
Room 115, City County Building
210 Martin Luther King Jr. Blvd.
Madison, WI 53703-3342
Attention: City Engineer

Any party may change its address for the receipt of notice by written notice to the other.

- (b) Governing Law. This Agreement shall be governed and construed in accordance with the laws of the State of Wisconsin.

This space is reserved for recording data

Return to:

City Engineering Division
Rm. 115, City-County Building
Madison, Wisconsin

- (c) Amendments or Further Agreements to be in Writing. This Agreement may not be modified in whole or in part unless such agreement is in writing and signed by all parties bound hereby.
- (d) Covenants Running with the Land. All of the easements, restrictions, covenants and agreements set forth in this Agreement are intended to be and shall be construed as covenants running with the land, binding upon, inuring to the benefit of, and enforceable by the parties hereto and their respective successors and assigns.
- (e) Partial Invalidity. If any provisions, or portions thereof, of this Agreement or the application thereof to any person or circumstance shall, to any extent, be invalid or unenforceable, the remainder of this Agreement, or the application of such provision, or portion thereof, to any other persons or circumstances shall not be affected thereby and each provision of this Agreement shall be valid and enforceable to the fullest extent permitted by law.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 2021.

STATE OF WISCONSIN)
COUNTY OF DANE) SS

Personally came before me this _____ day of _____, 2021, the above named _____, to me known to be the person(s) who executed the foregoing instrument and acknowledged the same.

NOTARY PUBLIC

My Commission Expires:_____

Drafted by: City Engineering Division
Rm. 115, City-County Building
Madison, Wisconsin

MD:ma

EXHIBIT A – Stormwater Maintenance Provisions

An initial installation certification (as-built) stamped by a P.E. registered in the state of Wisconsin shall be submitted to the City Engineer upon completion of construction. The as-built shall be of sufficient detail to show the system is functioning as designed. A statement by the certifying P.E. along with a drawing and digital photographs will suffice.

Green Roof System

The proposed green roof system utilizes 'Greenformation' manufactured system.

Owner shall install the Green Roof System in accordance with plans approved by City Engineer. Owner shall maintain records of installation, inspections, cleaning and any other maintenance all in accordance with Chapter 37 of the Madison General Ordinances. Any alterations to approved Green Roof System shall be approved by City Engineer.

Visual Inspection of the Green Roof System shall be performed, at a minimum, in early spring and early fall.

Maintenance shall include at a minimum:

- Removal of sediment, trash and debris should be done as needed.
- Restoration of plant material shall be by plugging, not seeding alone.
- Vegetation density should be maintained at 80% or higher.
- Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulch, adjusting and repairing devices, resetting plants to proper elevations or vertical position, and other operations as required to establish and maintain healthy and viable plantings.
- Periodically check soil depth and moisture levels across the planted area. Add growing media to system as needed to maintain design depths.
- Use integrated pest management practices to minimize use of pesticides. Only use products and methods acceptable to membrane roofing manufacturer.
- If water is observed ponding for more than 72 hours after a rain event, corrections shall be performed. If engineered soil media has become clogged with debris, may need to remove and replace in accordance with specifications.

Appendix D: Soils Information

Hydrologic Soil Group—Dane County, Wisconsin

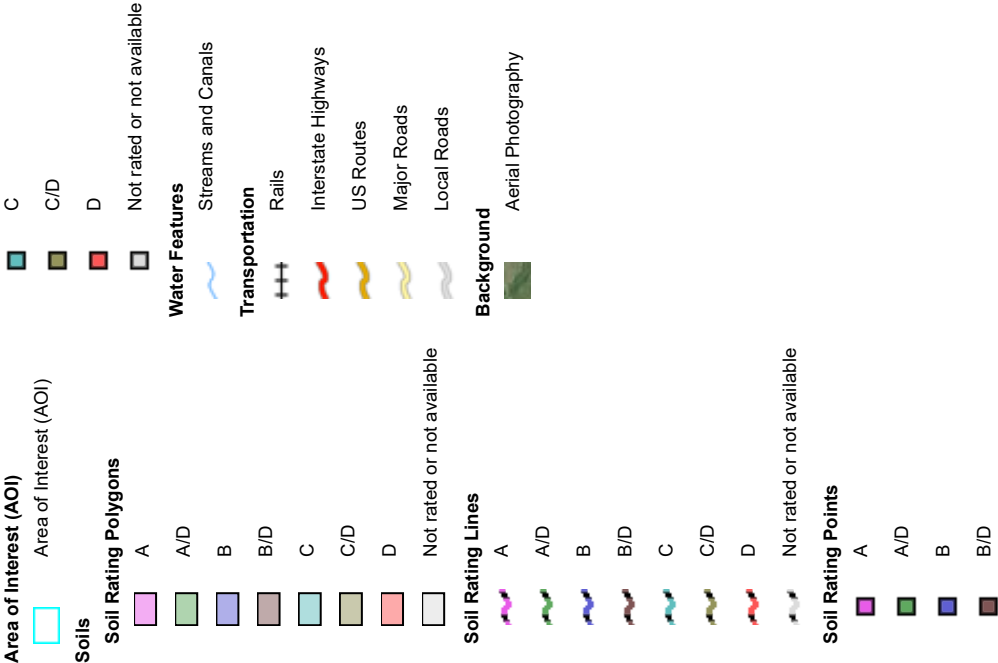


**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

5/4/2021
Page 1 of 4

MAP LEGEND



MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Dane County, Wisconsin
Survey Area Data: Version 19, Jun 8, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 13, 2020—Jul 31, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Co	Colwood silt loam, 0 to 2 percent slopes	C/D	1.2	100.0%
Totals for Area of Interest			1.2	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Appendix E: City of Madison Stormwater Management Summary Template

Project Name	Bakers Place	
Street Address	849 E Washington Ave	
Watershed (if known)	East Isthmus	

Site Impervious Area Summary		Square Feet	Acres
Total Site Area		43,644	1.00
Existing Impervious Area		42,856	0.98
New Impervious Area		-	-
Redeveloped Impervious Area		41,849	0.96
Removed Impervious Area		1,018	0.02
Net Impervious Area		41,838	0.96

Parcel Area Summary		Square Feet	Acres
Total Parcel Area		43,644	1.00
Total Site Area Draining to SWM BMP(s)		30,614	0.70
Total Offsite Area Draining to SWM BMP(s)		-	0.00
Total Uncontrolled Area		13,030	0.30

TSS Removal		
Number of lbs (without controls)	Lbs Removed (with controls)	% Reduction
385.3	100.5	74%

Phosphorus Removal			
Number of lbs (without controls)	Lbs Removed (with controls)	% Reduction	Does BMP have an underdrain? (Y/N)
n/a	n/a	#VALUE!	n/a

Peak Runoff Rates and Volumes	Predevelopment		Post Development		Reduction %		Elevation of Storm in Basin (ft)
	Rate (cfs)	Volume (ac-ft)	Rate (cfs)	Volume (ac-ft)	Rate (cfs)	Volume (ac-ft)	
1-Year, 24-Hour Storm (2.49")					#DIV/0!	#DIV/0!	
2-Year, 24-Hour Storm (2.84")					#DIV/0!	#DIV/0!	
5-Year, 24-Hour Storm (3.51")					#DIV/0!	#DIV/0!	
10-Year, 24-Hour Storm (4.09")	6.67	13,606.000	1.57	11,288.000	76.5%	17.0%	
100-Year, 24-Hour Storm (6.66")					#DIV/0!	#DIV/0!	
200-Year, 24-Hour Storm (7.53")					#DIV/0!	#DIV/0!	
500-Year, 24-Hour Storm (8.94")					#DIV/0!	#DIV/0!	

Redevelopment Metrics (if applicable)			Reduction Provided
Does proposed impervious area exceed 80% of existing site impervious area? (If NO, you can skip to the next section)		YES	
Peak Runoff Rates from the site reduced by 15% during a 10-year storm		YES	98%
Reduce runoff volume by 5% from the site during 10-year storm		YES	76.5%
Minimum Required Storage for First 1/2" of Rainfall over New + Redeveloped Impervious Area			17.0%
Storage Provided by Green Infrastructure			1,743.71 cf
Green infrastructure provides detention for first 1/2" of rainfall			4,881 cf
			YES

Infiltration			
Predevelopment Stay On (inches)	Required Stay On (inches)	Provided Stay On (inches)	90% Infiltration Achieved
n/a			NO

Oil and Grease Control		
Oil and Grease Control Required?? (Y/N)	N	
BMP	Quantity	
Bioretention Basin	0	
Inlet filters	0	
Snout System	0	
Rock Trench	0	

Thermal Control (Sugar River Watershed only)		
Thermal Control Required?? (Y/N)	N	
BMP	Quantity	
Bioretention Basin	0	
Infiltration Basin	0	
Rock Trench	0	
Other	Vegetated Roof	

Flooding Checks (if applicable)		
Lowest opening elevation of proposed development	852 ft	
Confirm that overflow from pond does not enter any structures.	n/a	
If site has underground parking and trench drain, confirm there's a safe overflow route/sump pump is sized for the 100-year storm.		Entrance at 852