103 Elm Street
Washington, MO 63090

BFA Engineering▪Surveying

636.239.4751
www.bfaeng.com

DATE: July 12, 2024

TO: City of La Crosse, WI

FROM: John Schebaum, BFA, Inc.

SUBJECT: Proposed 7Brew Development Stormwater Management Plan
3960 Mormon Coulee Road – BFA 8306

To Whom It May Concern:

On behalf of Plaza Street Partners, BFA, Inc. has prepared development plans for a proposed 7Brew Coffee Shop located at 3960 and 4014 Mormon Coulee Road. A Certified Survey Map will be prepared to create the new 7Brew property boundary, located directly along Mormon Coulee Road on the northeast side of the property owned by VSC Corporation. This memo has been prepared per City requirements to summarize the existing stormwater conditions of the property and discuss the proposed development and stormwater improvements.

The 7Brew property currently exists as an asphalt parking lot for an existing retail shopping center with multiple tenants. Most of the stormwater from the adjacent parking lot sheet flows towards the northeast to grated inlets within the paved area. It is then conveyed via an 18” diameter RCP storm sewer, which crosses the middle of the proposed 7Brew property, with an existing grated inlet located on the northern portion.

The proposed 7Brew development will have a disturbance area of approximately 0.63 acres. Based on the proposed improvements, the property's impervious area will be reduced by 0.07 acres. Therefore, no stormwater detention is required.

Per Chapter 105 of the City of La Crosse, WI Code of Ordinances, a stormwater BMP is proposed for the 7Brew development to control total suspended solids carried in runoff. This development type is considered a “Redevelopment,” resulting in a TSS Reduction requirement of 40 percent of load from parking areas and roads.

As shown on the BMP Drainage Area Map, a treatment area of 0.95 acres is proposed for the BMP, with approximately 0.72 acres of the treatment area resulting from offsite run-on from the shopping center parking lot.

WinSLAMM was used to evaluate proposed BMPs for the treatment area. A Biofiltration Basin was selected as the BMP. Stormwater is designed to flow into two curb cuts with concrete flumes leading to the depressed basin. The bottom of the basin will be constructed with a 2’ thick layer of engineered soil with a higher hydraulic conductivity on top of a 1’ thick layer of rock fill and draintile. The proposed design will encourage the infiltration of stormwater into the ground, while allowing filtered stormwater to exit the basin via a 4” draintile elevated below the 2’ thick layer of engineered soil.

A proposed grated inlet, elevated 1.5’ above the top of the engineered fill, is located on the basin's side slope to collect and capture stormwater during larger rain events.

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Based on the redevelopment condition of this project, decreased impervious area, proposed stormwater BMP, and larger treatment area, the proposed improvements appear to adequately meet the intentions of the City of La Crosse stormwater requirements. Should you have any additional comments or questions, please contact me at 636-231-4337 or jschebaum@bfaeng.com.

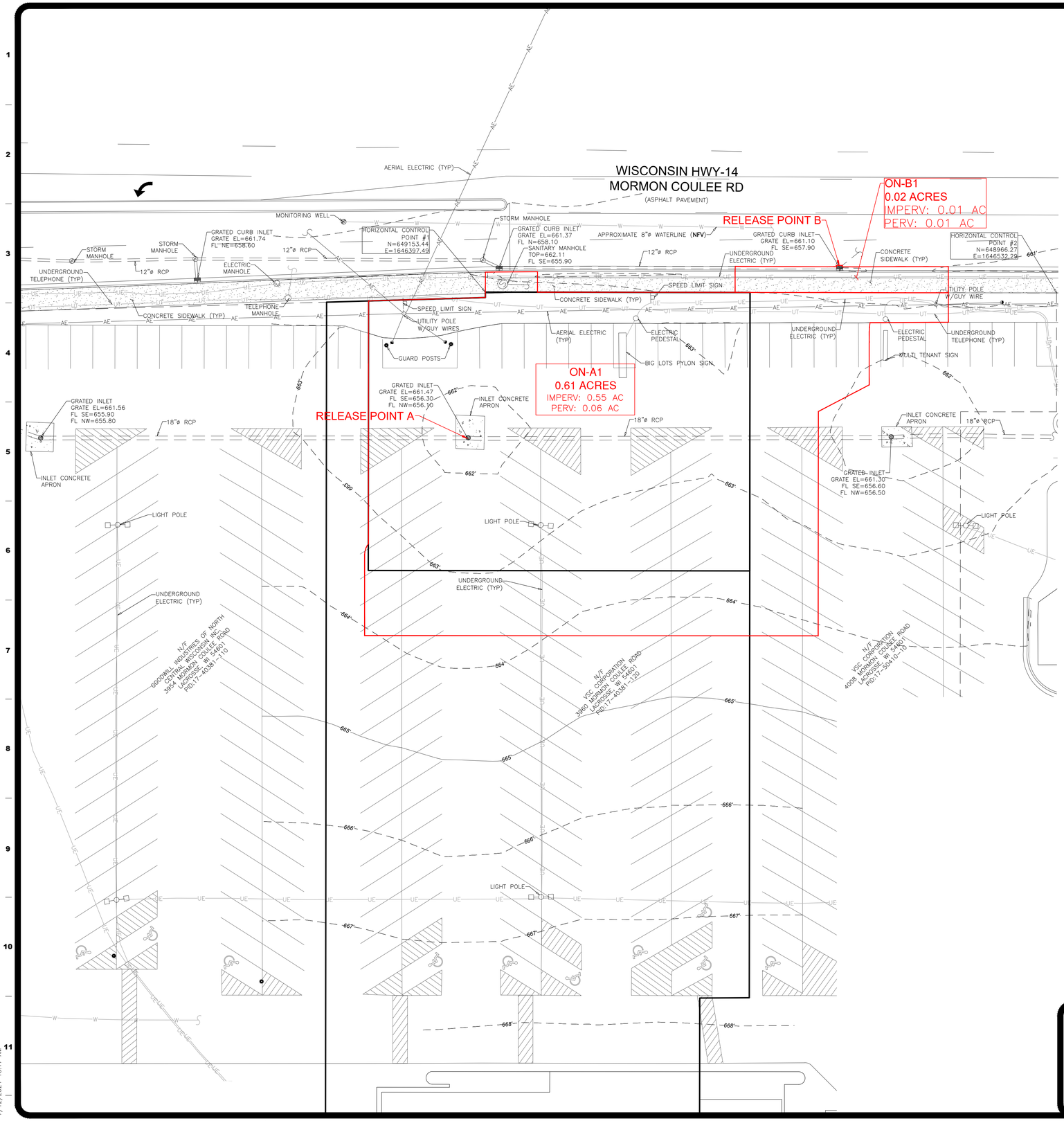
Respectfully,

John B. Schebaum

John Schebaum, BFA, Inc.

Enclosures: Pre-Development Drainage Area Map
Post Development Drainage Area Map
BMP Drainage Area Map
WinSLAMM Reports

PRE DEVELOPMENT DRAINAGE AREA MAP



0 20' 40'
SCALE: 1" = 20'

TOPOGRAPHIC LEGEND	
DESCRIPTION	EXISTING
AERIAL ELECTRIC	AE
UNDERGROUND ELECTRIC	UE
UNDERGROUND TELEPHONE	UT
GAS LINE	G
WATERLINE	W
SANITARY SEWER	SS
STORM SEWER	
EASEMENT	
PROPERTY LINE	
CHAINLINK/WOODEN FENCE	
CONTOURS	100
UTILITY POLE	
GUARD POST	GP
SANITARY MANHOLE	
WATER VALVE	
FIRE HYDRANT	
CATCH BASIN	
JUNCTION BOX	
FLARED END SECTION	
CLEANOUT	
GRATED INLET	
SOIL BORING	

PRE-DEVELOPMENT IN ACRES	
IMPERVIOUS AREA	0.56±
PERVIOUS AREA	0.07±
TOTAL SITE	0.63±

NOTE:
EXISTING FIELD DATA SHOWN HEREON WAS GATHERED BY BLEW & ASSOCIATES, P.A. ON APRIL 30, 2024

Three working days prior to the start of any excavation on this site the Contractor shall contact 1-800-242-8511 for utility location information.

The contractor shall verify and implement all the required Federal Occupational Safety and Health Administration (OSHA) and/or OSHA approved state-plan regulations established for the type of construction required by these plans.

PRELIMINARY DRAWING

FOR REVIEW PURPOSES ONLY
NOT TO BE USED FOR CONSTRUCTION

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103 ELM STREET WASHINGTON, MISSOURI 63090

LA CROSSE, WI (MORMON COULEE RD.)
PLAZA STREET PARTNERS
3400 COLLEGE BLVD, SUITE 200
LEAWOOD, KS 66211

REVISIONS

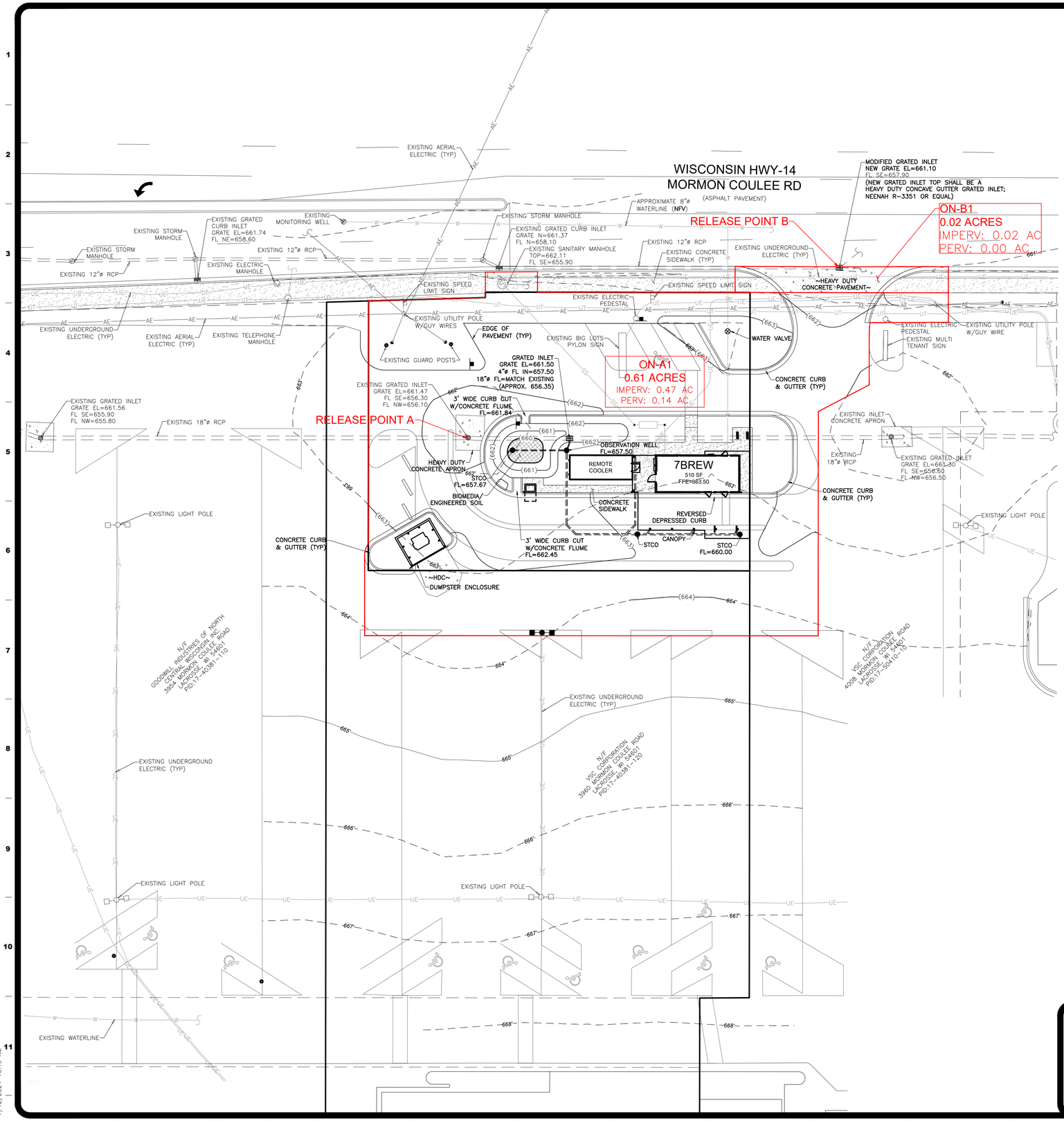
	By:	App:
1		
2		
3		
4		

DRAWN B.L.F.
CHECKED J.B.S.
DATE 07/12/24
SCALE 1"=20'
JOB No. 8306
SHEET NAME PRE DEVELOPMENT DA MAP

DA-1

P:\Vault\8306 La Crosse WI Mormon Coulee 7Brew\8306 Stormwater\8306 Pre DA Map.dwg
7/12/2024 10:17 AM

POST DEVELOPMENT DRAINAGE AREA MAP



TOPOGRAPHIC LEGEND	
DESCRIPTION	EXISTING
AERIAL ELECTRIC	AE
UNDERGROUND ELECTRIC	UE
UNDERGROUND TELEPHONE	UT
GAS LINE	G
WATERLINE	W
SANITARY SEWER	SS
STORM SEWER	
EASEMENT	
PROPERTY LINE	
CHAINLINK/WOODEN FENCE	
CONTOURS	100
UTILITY POLE	
GUARD POST	GP
SANITARY MANHOLE	
WATER VALVE	
FIRE HYDRANT	
CATCH BASIN	
JUNCTION BOX	
FLARED END SECTION	
CLEANOUT	
GRATED INLET	
SOIL BORING	

POST DEVELOPMENT IN ACRES	
IMPERVIOUS AREA	0.49±
PERVIOUS AREA	0.14±
TOTAL SITE	0.63±

0 20' 40'
SCALE: 1" = 20'

LA CROSSE, WI (MORMON COULEE RD.)
PLAZA STREET PARTNERS
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LEAWOOD, KS 66211

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By:		App:
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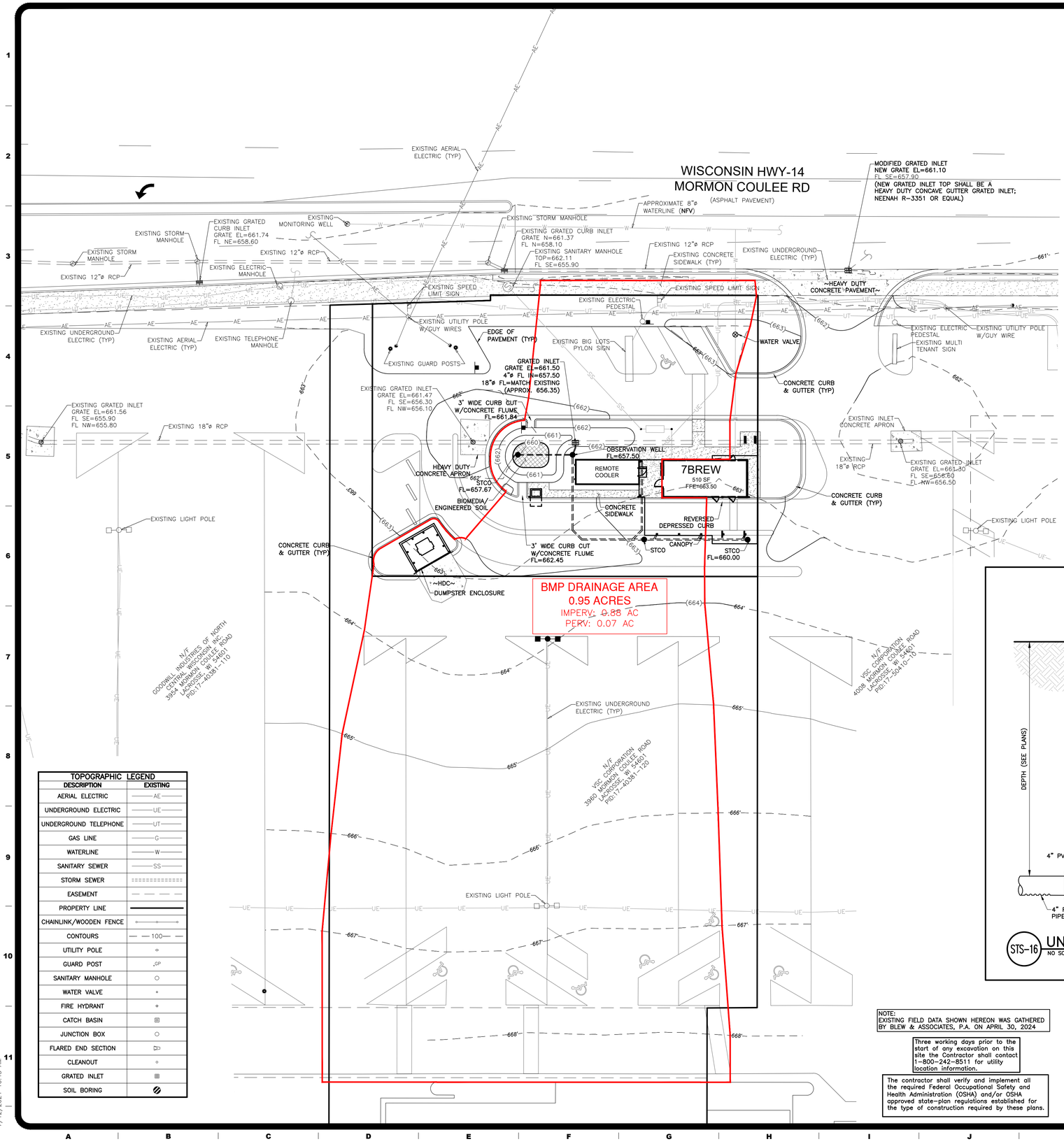
DRAWN	B.L.F.
CHECKED	J.B.S.
DATE	07/12/24
SCALE	1"=20'
JOB No.	8306
SHEET NAME	POST DEVELOPMENT DA MAP
	DA-2

P:\Vault\8306 La Crosse Wi Mormon Coulee 7Brew\8306 Stormwater\8306 Post DA Map.dwg
7/12/2024 10:19 AM

BMP DRAINAGE AREA MAP

0 20' 40'

SCALE: 1" = 20'



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EASEMENT	
PROPERTY LINE	
CHAINLINK/WOODEN FENCE	
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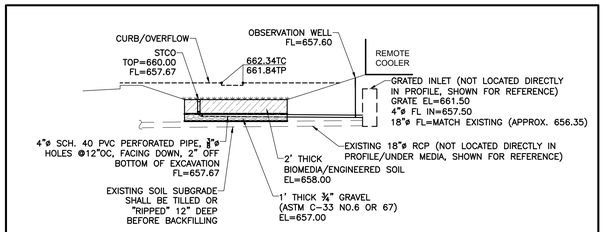
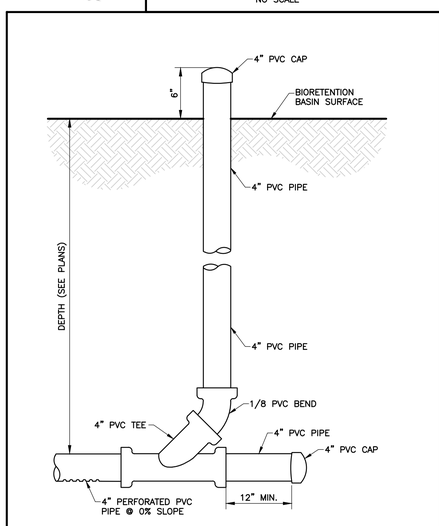
UTILITY POLE	
GUARD POST	GP
SANITARY MANHOLE	
WATER VALVE	
FIRE HYDRANT	
CATCH BASIN	
JUNCTION BOX	
FLARED END SECTION	
CLEANOUT	
GRATED INLET	
SOIL BORING	

THE BIOMEDIA/ENGINEERED SOIL SHOULD BE A SANDY LOAM OR LOAMY SAND (SHOULD CONTAIN A MINIMUM OF 60 PERCENT SAND, BY VOLUME). THE CLAY CONTENT FOR THESE SOILS SHOULD BE LESS THAN 10 PERCENT BY VOLUME. A SATURATED HYDRAULIC CONDUCTIVITY OF AT LEAST 1.0 INCHES PER HOUR IS REQUIRED. THE SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OR OTHER WOODY MATERIAL OVER 1 INCH IN DIAMETER. FOR BEST RESULTS, BRUSH OR SEEDS FROM NOXIOUS WEEDS, SUCH AS JOHNSON GRASS, MUGWORT, NUTSEDGE AND CANADIAN THISTLE SHOULD NOT BE PRESENT IN THE SOILS. PLACEMENT OF THE SOIL SHOULD BE IN LIFTS OF 12 TO 18 INCHES, LOOSELY COMPACTED (RUBBER WHEELED HEAVY EQUIPMENT AND MECHANICAL TAMPING DEVICES ARE NOT RECOMMENDED FOR COMPACTION).



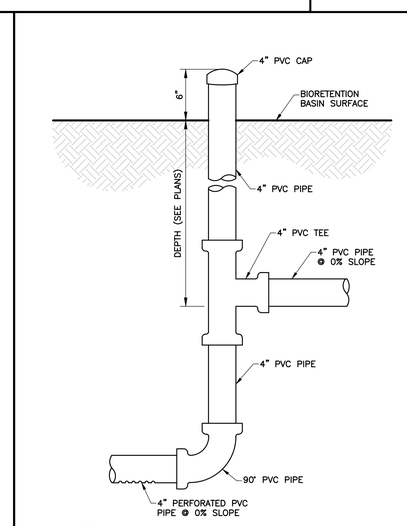
BIOFILTRATION BASIN PROFILE

NO SCALE



STS-16 UNDERDRAIN CLEANOUT DETAIL

NO SCALE



STS-17 OBSERVATION WELL DETAIL

NO SCALE

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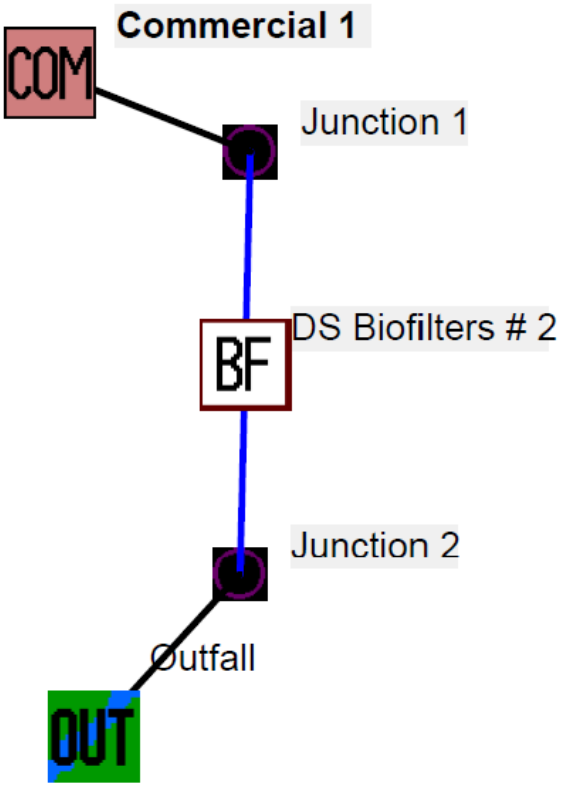
DRAWN	B.L.F.
CHECKED	J.B.S.
DATE	07/12/24
SCALE	1"=20'
JOB No.	8306
SHEET NAME	BMP DRAINAGE AREA MAP
	DA-3

P:\Vault\8306 La Crosse WI Mormon Coulee 7Brew\8306 Stormwater\8306 Post DA Map.dwg
7/12/2024 10:43 AM

WinSLAMM Reports

Drainage System



Data file name: P:_Plaza Street Partners\8306 La Crosse WI (Mormon Coulee) 7Brew\8306 Stormwater\WinSlamm\Mormon Coulee 7Brew Bio - 07-08-24.mdb
WinSLAMM Version 10.5.0
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
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
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
Date: 07-11-2024 Time: 14:00:42
Site information:

LU# 1 - Commercial: Commercial 1 Total area (ac): 0.950
13 - Paved Parking 1: 0.880 ac. Disconnected Normal Sandy PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP
51 - Small Landscaped Areas 1: 0.070 ac. Normal Sandy PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Biofilter CP# 1 (DS) - DS Biofilters # 2
1. Top area (square feet) = 600
2. Bottom aea (square feet) = 150
3. Depth (ft): 5.45
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 0.2
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 1
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 1
10. Porosity of rock filled volume = 0.4
11. Engineered soil infiltration rate: 1
12. Engineered soil depth (ft) = 2
13. Engineered soil porosity = 0.39
14. Percent solids reduction due to flow through engineered soil = 0
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0

Soil Data	Soil Type Fraction in Eng. Soil
Sand	0.500
Sandy Loam	0.500

Biofilter Outlet/Discharge Characteristics:
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 3
2. Weir crest width (ft): 1
3. Height of datum to bottom of weir opening: 4.84
Outlet type: Drain Tile/Underdrain
1. Underdrain outlet diameter (ft): 0.33
2. Invert elevation above datum (ft): 0.67
3. Number of underdrain outlets: 1

CONTROL PRACTICE: BIOFILTER

SLAMM for Windows Version 10.5.0

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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
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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: 07-11-2024 Time of run: 13:46:04
Total Area Modeled (acres): 0.950
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:	999.6	-	137.1	8.559	-
Outfall Total with Controls:	148.6	85.13%	35.89	0.3329	96.11%
Annualized Total After Outfall Controls:	149.0			0.3338	

Biofilter # 1 is expected to clog in 40.76 years.. Percent Solids Reduction due to Engineered Media Not Used

OUTFALL SUMMARY

CONTROL PRACTICE: SUMMARY TABLE

Data File: P:_Plaza Street Partners\8306 La Crosse WI (Mormon Coulee) 7Brew\8306 Stormwater\WinSlamm\Mormon Coulee 7Brew Bio - 07-08-24.mdb																														
Rain File: WisReg - Madison WI 1981.RAN																														
Date: 07-11-24 Time: 1:55:27 PM																														
Site Description:																														
Col. #:	2	3	4	5	6	7	8	9	10	11	12	13	14	15	18	19	23	27	28	29	30	33	36	39	54	61	62	63	64	65
Control Practice No.	Control Practice Type	Control Practice Name or Location	Total Inflow Volume (cf)	Total Outflow Volume (cf)	Percent Volume Reduction	Total Influent Load (lbs)	Total Effluent Load (lbs)	Percent Load Reduction	Flow Weighted Influent Conc (mg/L)	Flow Weighted Effluent Conc (mg/L)	Percent Conc. Reduction	Influent Median Part. Size (microns)	Effluent Median Part. Size (microns)	Notes	Maximum Stage (ft)	Hydraulic Volume Out (cf)	Treated Volume (cf)	Maximum Surface Ponding Time (hrs)	Maximum Subsurface Ponding Time (hrs)	Volume Infiltrated (cf)	Underdrain Discharge Vol. (cf)	Surface Discharge Bypass Vol. (cf)	Final Surface Infiltration Rate (in/hr)	Surface Ponding Events >72 hrs (Count)	Residence Time in Media (hrs)	Ttl. Mass Trapped in Media (lbs)	Ttl. Mass Infiltrated (lbs)	Annual Allowable Clog Rate (lbs/yr)	First Year Cum. Load (lbs)	Time Until Clogging Failure (yrs)
1	Biofilter	DS Biofilters # 2	999.6	148.6	85.13	8.559	0.3328	96.11	137.1	35.88	73.836	7.8	1.92	No Biofilter Overflows	3.39	149	1000	10.6	21.1	852.98	149	0	0.975	0	9.6	7.54	1.56	0.205	0.05	40.76