

Memorandum

To: Village of Cottage Grove - Village Engineer
(Attn: Kevin Lord)

Date: July 23, 2020

From: Michael L. Calkins, P.E.

CC:

RE: 1855 Patio Expansion (1855 Saloon & Grill) - Stormwater Management & Erosion Control Plan

A stormwater management and erosion control plan has been prepared for the proposed 1855 Patio Expansion Project. The project location is directly east of the existing 1855 Saloon & Grill and is located in SW $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 16, T 7 N, R 11 E, Village of Cottage Grove, Dane County, WI. The location of the site can be seen on the attached plan set.

The proposed project includes filling the existing asphalt parking lot directly east of the existing 1855 Saloon & Grill building and converting it to an outdoor patio area. The subgrade of the existing parking lot will not be disturbed, thus this portion of the project is not considered redevelopment and subsequently has not been modeled. The project will also include installing a new permeable parking lot in the grass area east of proposed outdoor patio. The new permeable parking lot is considered new development and modeled accordingly. The new permeable parking lot and associated land disturbance is under one acre so it will not require a WDNR permit for stormwater or erosion control. Additional information for the proposed project can be found in the attached plan set.

The project site resides in Sub-Area 1 of the Huston Olde Town Development as shown in the approved November, 2006, stormwater report. The Huston Olde Town Development along with the existing Arrowwood Green Development and the existing Aster Memory Care all drain to a wet detention basin located on the southeast corner of the overall development site. The total area draining to the wet detention basin is approximately 29.86 acres, per previous reports. The wet detention basin discharges to an existing infiltration basin. Discharge from the wet detention basin and infiltration basin flows into a downstream regional detention basin. This regional basin controls the post-development discharge rate to pre-development conditions, per previous reports. See the attached Huston Olde Town Development Phasing Plan for the location of Sub-Area 1.

The intent of the stormwater management and erosion control plan is to provide 90 percent of the pre-development infiltration volume, 54 percent total phosphorus removal, and treat oil and grease for the new parking area via permeable pavement. The permeable pavement is anticipated to be Spancrete Replenish, which is a permeable precast concrete system. The existing wet detention basin that Sub-Area 1 of the Huston Olde Town Development drains to will treat the proposed

project site for TSS removal while the regional detention basin further downstream will control the post-development peak discharge rates to pre-development conditions. Stormwater runoff from the proposed project will be directed to existing and proposed inlets on-site that are connected to existing storm sewer infrastructure. The native soils at the project site are anticipated to be sandy loam with a design infiltration rate of 0.5 inches per hour. However, to be conservative, the native soil infiltration rate used in the modeling was reduced to a silt loam design infiltration rate of 0.13 inches per hour. The permeable pavement modeling assumes a minimum cleaning frequency of once every ten years. Modeling using the Madison WI Twenty 1980-1999.ran rainfall file results in a maximum surface seepage rate of approximately 15.9 inches per hour after 20 years of modeling. Therefore, the permeable pavement exceeds the minimum allowed seepage rate of 10 inches per hour and thus the design life is anticipated to be in excess of 20 years with respect to clogging capability. Soil borings/pits will need to be conducted prior to construction for verification. Erosion and sediment control will be accomplished via a stone construction entrance, silt fence, erosion matting, and inlet protection. Please see the attached plan set, post-development drainage map, USLE exhibit map, and USLE calculations for more information.

The following tables are the WinSLAMM Software modeling results for the new parking area. The modeling results indicate the design meets the stormwater management requirements outlined in this memo. The models are attached.

Table 1: Total Suspended Solid Calculations
(One Year of Modeling – WisReg Madison WI 1981.RAN File)

	Particulate Solids Yield (lbs.)	Percent Particulate Solids Reduction
Total of All Land Uses without Controls	130.7	
Outfall Total with Controls	24.39	81.34
Annualized Total After Outfall Controls	24.45	

Table 2: Total Infiltration
(One Year of Modeling – WisReg Madison WI 1981.RAN File)

Condition	Runoff Volume (cu. ft.)	Percent Infiltrated
Pre-Development	1,985	
Post-Development	4,726	90.6

Table 2: Total Phosphorus Removal
(One Year of Modeling – WisReg Madison WI 1981.RAN File)

	mg/L	lbs.	%
Concentration – No Controls	0.2913		
Concentration – With Controls	0.3656		
Pollutant Yield – No Controls		0.2815	
Pollutant Yield – With Controls		0.1079	
Percent Yield Reduction			61.68

**Table 4: Maximum Surface Seepage Rate
(20 Years of Modeling – WisReg - Madison WI Twenty 1980-1999.RAN File)**

Duration of Modeling (Years)	Maximum Surface Seepage Rate (in./hr.)
10	73.7
20	15.9

Attachments:

- 1.) Plan Set
- 2.) Huston Olde Town Development Phasing Map
- 3.) Post-Development Drainage Map
- 4.) USLE Exhibit Map & Calculations Spreadsheet
- 5.) Stormwater Management Models (WinSLAMM)
- 6.) WinSLAMM Infiltration Calculations
- 7.) WinSLAMM Surface Seepage Rate Output Spreadsheet