



SITE DATA

Project Information		
Project Name:	Carolina Legacy Volleyball	
Applicant:	All Purpose Driven, LLC	
Applicant Contact Name:		
Applicant Contact Number:		
Contact Email:		
Municipal Jurisdiction (Select from dropdown menu):	Rolesville	
Last Updated:	10/02/2020	
Site Data:		
Total Site Area (Ac):	4.95	
Existing Lake/Pond Area (Ac):	0.00	
Proposed Disturbed Area (Ac):	4.95	
Impervious Surface Area (acre):	2.05	
Type of Development (Select from Dropdown menu):	Non-Residential	
Percent Built Upon Area (BUA):	41%	
Project Density:	High	
Is the proposed project a site expansion?	No	
Number of Drainage Areas on Site:	1	
NOAA	1-Year, 24-Hour Storm (inches) (See NOAA Website):	2.86
	2-Year, 24-Hour Storm (inches) (See NOAA Website):	3.45
	10-Year, 24-Hour Storm (inches) (See NOAA Website):	5.04
Lot Data (if applicable):		
Total Acreage in Lots:		
Number of Lots:		
Average Lot Size (SF):		
Total Impervious Surface Area on Lots (SF):		
Average Impervious Surface Area Per Lot (SF):		
Stormwater Narrative (limit to 1,200 characters - attach additional pages with submittal if necessary):		



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DRAINAGE AREA 1
STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA	PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=	4.95				4.95			
Site Acreage within Drainage=	4.95				4.95			
One-year, 24-hour rainfall (in)=	2.86							
Two-year, 24-hour rainfall (in)=	3.45							
Ten-year, 24-hour storm (in)=	5.04							
Total Lake/Pond Area (Acres)=	0.00				0.00			
Lake/Pond Area not in the Tc flow path (Acres)=	0.00				0.00			
Site Land Use (acres):	A	B	C	D	A	B	C	D
Pasture								
Woods, Poor Condition								
Woods, Fair Condition								
Woods, Good Condition								
Open Space, Poor Condition								
Open Space, Fair condition		4.95				2.90		
Open Space, Good Condition								
Reforestation (in dedicated OS)								
Connected Impervious						2.05		
Disconnected Impervious								
SITE FLOW	PRE-DEVELOPMENT T_c				POST-DEVELOPMENT T_c			
Sheet Flow								
Length (ft)=								
Slope (ft/ft)=								
Surface Cover:								
n-value=								
T _t (hrs)=								
Shallow Flow								
Length (ft)=								
Slope (ft/ft)=								
Surface Cover:								
Average Velocity (ft/sec)=								
T _t (hrs)=								
Channel Flow 1								
Length (ft)=								
Slope (ft/ft)=								
Cross Sectional Flow Area (ft ²)=								
Wetted Perimeter (ft)=								
Channel Lining:								
n-value=								
Hydraulic Radius (ft)=								
Average Velocity (ft/sec)=								
T _t (hrs)=								



Project Name: Carolina Legacy Volleyball

DRAINAGE AREA 1
STORMWATER PRE-POST CALCULATIONS

Channel Flow 2		
Length (ft)=		
Slope (ft/ft)=		
Cross Sectional Flow Area (ft ²)=		
Wetted Perimeter (ft)=		
Channel Lining:		
n-value=		
Hydraulic Radius (ft)=		
Average Velocity (ft/sec)=		
T _i (hrs)=		
Channel Flow 3		
Length (ft)=		
Slope (ft/ft)=		
Cross Sectional Flow Area (ft ²)=		
Wetted Perimeter (ft)=		
Channel Lining:		
n-value=		
Hydraulic Radius (ft)=		
Average Velocity (ft/sec)=		
T _i (hrs)=		
T _c (hrs)=	0.25	0.10
RESULTS	PRE-DEVELOPMENT	POST-DEVELOPMENT
Composite Curve Number=	69	81
Disconnected Impervious Adjustment		
Disconnected impervious area (acre) =		
CN _{adjusted (1-year)} =	81	
High Density Only		
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =	7,596	
1-year, 24-hour storm (Peak Flow)		
Runoff (inches) = Q* _{1-year} =	0.60	1.21
Volume of runoff (ft ³) =	10,711	21,696
Volume change (ft ³) =	10,985	
Peak Discharge (cfs)= Q _{1-year} =	2.895	9.432
2-year, 24-hour storm (LID)		
Runoff (inches) = Q* _{2-year} =	0.92	1.67
Volume of runoff (ft ³) =	16,606	29,987
Peak Discharge (cfs)= Q _{2-year} =	4.488	13.037
10-year, 24-hour storm (DIA)		
Runoff (inches) = Q* _{10-year} =	1.99	3.02
Volume of runoff (ft ³) =	35,694	54,294
Peak Discharge (cfs)= Q _{10-year} =	9.647	23.604



Project Name: Carolina Legacy Volleyball

**DA SITE SUMMARY
STORMWATER PRE-POST CALCULATIONS**

SITE SUMMARY										
DRAINAGE AREA SUMMARIES										
DRAINAGE AREA:	DA1	DA2	DA3	DA4	DA5	DA6	DA7	DA8	DA9	DA10
Pre-Development (1-year, 24-hour storm)										
Runoff (in) = $Q_{pre,1-year}$ =	0.60									
Peak Flow (cfs)= Q_{1-year} =	2.895									
Post-Development (1-year, 24-hour storm)										
Proposed Impervious Surface (acre) =	2.05									
Runoff (in)= Q_{1-year} =	1.21									
Peak Flow (cfs)= Q_{1-year} =	9.432									
Increase in volume per DA (ft ³)_1-yr storm=	10,985									
Minimum Volume to be Managed for DA HIGH DENSITY REQUIREMENT = (ft ³) =	7,596									
TARGET CURVE NUMBER (TCN)										
Site Data										
SITE ISOIL COMPOSITION										
HYDROLOGIC SOIL GROUP				<u>Site Area</u>	<u>%</u>	<u>Target CN</u>				
A				0.00	0%	N/A				
B				4.95	100%	N/A				
C				0.00	0%	N/A				
D				0.00	0%	N/A				
				Total Site Area (acres) =		4.95				
				Percent BUA (Includes Existing Lakes/Pond Areas) =		41%				
				Project Density =		High				
				Target Curve Number (TCN) =		N/A				
				$CN_{adjusted (1-year)}$ =		81				
				Minimum Volume to be Managed (Total Site) Per TCN Requirement= ft ³ =		N/A				
Site Nitrogen Loading Data										
HSG	TN export coefficient (lbs/ac/yr)			Site Acreage			N Export			
Pasture	1.2			0.00			0.00			
Woods, Poor Condition	1.6			0.00			0.00			
Woods, Fair Condition	1.2			0.00			0.00			
Woods, Good Condition	0.8			0.00			0.00			
Open Space, Poor Condition	1.0			0.00			0.00			
Open Space, Fair Condition	0.8			2.90			2.32			
Open Space, Good Condition	0.6			0.00			0.00			
Reforestation (in dedicated OS)	0.6			0.00			0.00			
Impervious	21.2			2.05			43.46			
SITE NITROGEN LOADING RATE (lbs/ac/yr)=				9.25						
Nitrogen Load (lbs/yr)=				45.78						
TOTAL SITE NITROGEN TO MITIGATE (lbs/yr)_Wendell Only=				27.96						
Site Nitrogen Loading Data For Expansions Only										
				Existing			New			
Impervious(acres)=				NA			NA			
"Expansion Area" (acres)=										
Nitrogen Load (lbs/yr)=				NA			NA			
SITE NITROGEN LOADING RATE (lbs/ac/yr)=				NA			NA			
Total Site loading rate (lbs/ac/yr)										
TOTAL SITE NITROGEN TO MITIGATE (lbs/yr)=				NA						



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**DRAINAGE AREA 1
BMP CALCULATIONS**

DRAINAGE AREA 1 - BMP DEVICES AND ADJUSTMENTS											
DA1 Site Acreage=	4.95										
DA1 Off-Site Acreage=											
Total Required Storage Volume for Site TCN Requirement (ft ³)=	N/A										
Total Required Storage Volume for DA1 1" Rainfall for High Density (ft ³)=	7,596										
Will site use underground detention/cistern?	No	Enter % of the year water will be reused=								Note: Supporting information/details should be submitted to demonstrate water usage.	
ENTER ACREAGE FOR ALL SUB-DRAINAGE AREAS IN DA											
	HSG	Sub-DA1(a) (Ac)		Sub-DA1(b) (Ac)		Sub-DA1(c) (Ac)		Sub-DA1(d) (Ac)		Sub-DA1(e) (Ac)	
		Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site	Site	Off-site
Pasture											
Woods, Poor Condition											
Woods, Fair Condition											
Woods, Good Condition											
Open Space, Poor Condition											
Open Space, Fair Condition		1.10		1.80							
Open Space, Good Condition											
Reforestation (in dedicated OS)											
Impervious		0.97		1.08							
Sub-DA1(a) BMP(s)											
Device Name (As Shown on Plan)	Device Type	Water Quality Volume for Sub-DA (ft ³)		Provided Volume that will drawdown 2-5 days (ft ³)		Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)		
	Wet Detention Basin	1,701		8,000		25%	21.44	5.36	48		
						0%	16.08	0.00			
						0%	16.08	0.00			
						0%	16.08	0.00			
						0%	16.08	0.00			
Total Nitrogen remaining leaving the subbasin (lbs):						16.08					
Sub-DA1(b) BMP(s)											
If Sub-DA1(b) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):											
Device Name (As Shown on Plan)	Device Type	Water Quality Volume for Sub-DA (ft ³)		Provided Volume that will drawdown 2-5 days (ft ³)		Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)		
		2,576		0		0%	24.34	0.00			
						0%	24.34	0.00			
						0%	24.34	0.00			
						0%	24.34	0.00			
						0%	24.34	0.00			
Total Nitrogen remaining leaving the subbasin (lbs):						24.34					
Sub-DA1 (c) BMP(s)											
If Sub-DA1(c) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):											
Device Name (As Shown on Plan)	Device Type	Water Quality Volume for Sub-DA (ft ³)		Provided Volume that will drawdown 2-5 days (ft ³)		Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)		
						0%	0.00	0.00			
						0%	0.00	0.00			
						0%	0.00	0.00			
						0%	0.00	0.00			
						0%	0.00	0.00			
Total Nitrogen remaining leaving the subbasin (lbs):											



**DRAINAGE AREA 1
BMP CALCULATIONS**

Sub-DA1(d) BMP(s)							
If Sub-DA1(d) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):							
Device Name (As Shown on Plan)	Device Type	Water Quality Volume for Sub-DA (ft ³)	Provided Volume that will <u>drawdown 2-5 days</u> (ft ³)	Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)
				0%	0.00	0.00	
				0%	0.00	0.00	
				0%	0.00	0.00	
				0%	0.00	0.00	
				0%	0.00	0.00	
Total Nitrogen remaining leaving the subbasin (lbs):							
Sub-DA1(e) BMP(s)							
If Sub-DA1(e) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):							
Device Name (As Shown on Plan)	Device Type	Water Quality Volume for Sub-DA (ft ³)	Provided Volume that will <u>drawdown 2-5 days</u> (ft ³)	Nitrogen Removal Efficiency	Sub-DA Nitrogen (lbs)	Nitrogen Removed (lbs)	Drawdown Time (hours)
				0%	0.00	0.00	
				0%	0.00	0.00	
				0%	0.00	0.00	
				0%	0.00	0.00	
				0%	0.00	0.00	
Total Nitrogen remaining leaving the subbasin (lbs):							
DA1 BMP SUMMARY							
Total Volume Treated (ft ³)=				8,000			
Nitrogen Mitigated(lbs)=				5.36			
1-year, 24-hour storm							
Post BMP Volume of Runoff (ft ³) _(1-year) =				13,696			
Post BMP Runoff (inches) = Q* _(1-year) =				0.76			
Post BMP CN _(1-year) =				72			
Post BMP Peak Discharge (cfs)= Q _{1-year} =							
2-year, 24-hour storm (LID)							
Post BMP Volume of Runoff (ft ³) _(2-year) =				21,987			
Post BMP Runoff (inches) = Q* _(2-year) =				1.22			
Post BMP CN _(2-year) =				74			
Post BMP Peak Discharge (cfs)= Q _(2-year) =							
10-year, 24-hour storm (DIA)							
Post BMP Volume of Runoff (ft ³) _(10-year) =				46,294			
Post BMP Runoff (inches) = Q* _(10-year) =				2.58			
Post BMP CN _(10-year) =				91			
Post BMP Peak Discharge (cfs)= Q _(10-year) =							



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DA SITE SUMMARY
BMP CALCULATIONS

BMP SUMMARY										
DRAINAGE AREA SUMMARIES										
DRAINAGE AREA:	DA1	DA2	DA3	DA4	DA5	DA6	DA7	DA8	DA9	DA10
Pre-Development (1-year, 24-hour storm)										
Runoff (in)= Q^*_{1-year} =	0.60									
Peak Flow (cfs)= Q_{1-year} =	2.895									
Post-Development (1-year, 24-hour storm)										
Target Curve Number (TCN) =	NA									
Post BMP Runoff (inches) = $Q^*_{(1-year)}$ =	0.76									
Post BMP Peak Discharge (cfs)= Q_{1-year} =										
Post BMP $CN_{(1-year)}$ =	72									
Post-BMP Nitrogen Loading										
TOTAL SITE NITROGEN MITIGATED (lbs)=	5.36									
SITE NITROGEN LOADING RATE (lbs/ac/yr)=	8.17									
TOTAL SITE NITROGEN LEFT TO MITIGATE_Wendell Only (lbs)=	22.60									