

Towns of Rolesville, Wendell and Zebulon Stormwater Tool Directions

The Wake County Municipal Stormwater Tool is required for all stormwater submittals in Rolesville, Wendell, and Zebulon. Engineer will input all data requested that is highlighted in blue. Engineer may follow provided links to view calculations used in this tool. Calculations for peak flow, runoff, time of concentration, etc. are for individual drainage areas. Engineer should complete a worksheet for each drainage area within a project limit.

1	<p>Complete SITE DATA worksheet. SITE DATA worksheet should be submitted with preliminary plan submittals and modified and submitted for construction plan submittals.</p> <p>The 2-yr, 24-hr rainfall input will be used for projects requesting LID classification further into the tool. The 10-year, 24-hour rainfall input will be used for potential Downstream Impact Analyses (DIA).</p> <p>Stormwater Narrative should describe the site conditions in pre- and post-development conditions including a description of site improvements and proposed stormwater BMPs.</p>
2	<p>Complete DA worksheets. Most of the site data is inputted by the engineer on the DA worksheets. DA worksheets are designed essentially to account for Ultra-Low, Low, and High Density project requirements per Ordinance standards.</p> <p>DA Worksheets will calculate runoff, time of concentration, peak flow, and volume to be managed per drainage area. Inputs will also be used to calculate the site composite curve numbers for pre and post development, Target Curve Number (TCN), and total nitrogen loading (TN) calculations.</p> <p>This sheet will also calculate required volume management for the 1st inch rainfall for high density projects. 1st inch of runoff should be handled by each DA BMP for High Density projects.</p> <p>Disconnected Impervious - This area will be used to provide an adjusted post development composite curve number (CN_{adjusted}) to allow a credit for the use of disconnected impervious. Site plans should clearly indicate areas of disconnected impervious.</p>
3	<p>SITE SUMMARY worksheet summarizes the pre and post runoff, Tc, and peak flow per drainage area based on inputs from DA worksheets. This worksheet denotes the volume required for management per drainage area based on high density requirements.</p> <p>TCN and composite curve numbers for pre and post development are also calculated and summarized. If the TCN is exceeded, this worksheet will calculate total volume to be managed for the entire site based on TCN requirements.</p> <p>Nitrogen Loading: Nitrogen Loading Rate for the site is calculated based on the Hydrologic Soil Groups and site acreages imputed on DA worksheets. This worksheet calculates the total amount of nitrogen loading. Nitrogen total will be used on following BMP worksheets.</p> <p>Note: There are no engineer inputs on this sheet and all exceedances from DA worksheets will be flagged in red.</p>
4	<p>DA BMP worksheets require engineer to input proposed BMP information. BMPs are categorized by sub-basins within the drainage area. Engineer should input BMP device name, type, and volume provided. BMP requirements are automatically imported from previous inputs.</p> <p>Engineer should input land uses by sub-basin. Off-site drainage to the sub-basin may also be inputted to allow credit for nitrogen removal (if said drainage is routed through the BMP).</p> <p>BMPs are required in each DA where post-development peak flow is higher than pre-development peak flow. Only under special circumstances will a BMP not be required. In these cases, the engineer must show the following:</p> <ol style="list-style-type: none"> 1. Total runoff volume for the DA must be less than 10% of the entire site runoff. 2. TN must be handled for the site elsewhere. 3. Runoff must not leave the DA at an erosive velocity. 4. Proposed design must comply with all state and federal regulations. <p>DA BMP worksheets will ensure that proposed BMPs meet requirements for peak flow, TCN, and for Nitrogen. Engineer must input post-BMP discharge.</p> <p>Note: Engineers are required to input post BMP peak flow for the 1-year, 2-year, and 10-year storms for each DA. The SW Design Tool uses the TR-55 method. The TR-55 method is preferred for post BMP calculations. If engineer uses a method/model other than TR-55 for the post-BMP peak discharge and runoff, engineer must also provide pre-development calculations from the method/model (in addition to the SW Design Tool) and pre-development calculations must be within 10% of results computed by the SW Design Tool). A summary sheet should be attached with the submittal to for all inputs used in design.</p>
5	<p>BMP SUMMARY worksheet summarizes the pre and post BMP runoff, and peak flow per drainage area based on inputs from DA BMP worksheets.</p> <p>Nitrogen Loading: Nitrogen mitigated for the site is calculated based on the inputs on DA BMP worksheets. This worksheet calculates the total amount of nitrogen left to be mitigated for the site (Wendell only). Site expansions use the apportioning method.</p> <p>Note: There are no engineer inputs on this sheet and all exceedances from DA BMP worksheets will be flagged in red.</p>
6	<p>LID worksheet summarizes the pre and post runoff, Tc, and peak flow per drainage area for the 2-year, 24-hour storm based on inputs from DA and BMP worksheets. This worksheet will determine if design calculations provided meet LID classification.</p> <p>Engineers may wish to modify site design or mitigate with additional BMPs to meet LID Requirements. In that case, DA and BMP worksheets should be modified to meet these requirements and the LID sheet will be updated automatically.</p> <p>If calculation requirements for LID are met, Engineer should complete the <i>LID CHECKLIST</i> on LID worksheet and provide associated documentation to determine if project meets ALL LID requirements.</p>
7	<p>Downstream Impact Analysis DIA worksheet presents requirements for a downstream impact analysis. Based on engineer inputs, this sheet will report if a DIA is required for the project based on the 10-year storm discharge leaving each discharge point. This stormwater tool does NOT complete the actual downstream impact analyses.</p> <p>A DIA shall be performed at the outlet(s) of the site, and downstream at each tributary junction to the point(s) in the conveyance system where the area of the portion of the site draining into the system is less than or equal to 10 percent of the total drainage area above that point. The outflow hydrograph at these points is to be determined for the pre-development condition. Then, the outflow hydrograph at each of these points is to be determined for the conditions after the site in question has been developed. <u>All hydrographs and inputs should be provided with plan submittal.</u></p>



SITE DATA

Project Information		
Project Name:	Rolesville Dental Office	
Applicant:	Tarr Group, LLC	
Applicant Contact Name:	Dylan Tarr	
Applicant Contact Number:	317-678-7517	
Contact Email:	Dylan@tarr-group.com	
Municipal Jurisdiction (Select from dropdown menu):	Rolesville	
Last Updated:	Wednesday, April 13, 2022	
Site Data:		
Total Site Area (Ac):	1.14	
Existing Lake/Pond Area (Ac):		
Proposed Disturbed Area (Ac):	0.99	
Impervious Surface Area (acre):	0.71	
Type of Development (Select from Dropdown menu):	Non-Residential	
Percent Built Upon Area (BUA):	62%	
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):	3.46
	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):		
<p>The proposed Dental Office project consists of a 4,280 square foot building with associated infrastructure. The project is located north of the Hampton Lake Dr. & Louisburg Rd. intersection. The existing conditions are currently slightly wooded to open and drain to a ditch on the NW side of the site. A portion of offsite drainage is currently flowing to the site. The proposed condition is to collect runoff via a stormwater sewer system and treat the water via a bioretention basin with IWS before discharging to the proposed underground detention facility. The second BMP required is the proposed underground detention basin, which will infiltrate the rest of the required water quality volume on-site. A small portion of offsite will also be collected and bypassed via a added inlets along existing private drive to the NE. Some direct discharge will flow off the NW portion of the site due to proposed grades tying back to existing drive grades. Please see attached for stormwater calculations. Please see site plans and details for more information. Supporting Calculations are attached to this design tool summary. Existing peak runoff conditions is 1.82 cfs while the proposed peak runoff condition is to be 0.67 cfs for the 1 year 24 hour storm event.</p>		



Project Name: Rolesville Dental Office

DRAINAGE AREA 1
STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA	PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=	1.14				1.14			
Site Acreage within Drainage=	1.12				1.12			
One-year, 24-hour rainfall (in)=	2.86							
Two-year, 24-hour rainfall (in)=	3.46							
Ten-year, 24-hour storm (in)=	5.04							
Total Lake/Pond Area (Acres)=	1.14				1.14			
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				1.12				
Woods, Good Condition								
Open Space, Poor Condition								
Open Space, Fair condition								0.41
Open Space, Good Condition								
Reforestation (in dedicated OS)								
Connected Impervious								0.71
Disconnected Impervious				0.02				0.02
SITE FLOW	PRE-DEVELOPMENT T_c				POST-DEVELOPMENT T_c			
Sheet Flow								
Length (ft)=	100.00				50.00			
Slope (ft/ft)=	0.040				0.040			
Surface Cover:	Woods				Grass			
n-value=	0.400				0.240			
T _t (hrs)=	0.287				0.110			
Shallow Flow								
Length (ft)=	215.00				70.00			
Slope (ft/ft)=	0.040				0.040			
Surface Cover:	Unpaved				Unpaved			
Average Velocity (ft/sec)=	3.23				3.23			
T _t (hrs)=	0.02				0.01			
Channel Flow 1								
Length (ft)=	1.00				1.00			
Slope (ft/ft)=	1.000				1.000			
Cross Sectional Flow Area (ft ²)=	1.00				1.00			
Wetted Perimeter (ft)=	1.00				1.00			
Channel Lining:	Grass				Grass			
n-value=	0.035				0.035			
Hydraulic Radius (ft)=	1.00				1.00			
Average Velocity (ft/sec)=	42.57				42.57			
T _t (hrs)=								



Project Name: Rolesville Dental Office

DRAINAGE AREA 1
STORMWATER PRE-POST CALCULATIONS

Channel Flow 2		
Length (ft)=	1.00	1.00
Slope (ft/ft)=	1.000	1.000
Cross Sectional Flow Area (ft ²)=	1.00	1.00
Wetted Perimeter (ft)=	1.00	1.00
Channel Lining:	Grass	Grass
n-value=	0.035	0.035
Hydraulic Radius (ft)=	1.00	1.00
Average Velocity (ft/sec)=	42.57	42.57
T _t (hrs)=		
Channel Flow 3		
Length (ft)=	1.00	1.00
Slope (ft/ft)=	1.000	1.000
Cross Sectional Flow Area (ft ²)=	1.00	1.00
Wetted Perimeter (ft)=	1.00	1.00
Channel Lining:	Grass	Grass
n-value=	0.035	0.035
Hydraulic Radius (ft)=	1.00	1.00
Average Velocity (ft/sec)=	42.57	42.57
T _t (hrs)=		
T _c (hrs)=	0.31	0.12
RESULTS	PRE-DEVELOPMENT	POST-DEVELOPMENT
Composite Curve Number=		
Disconnected Impervious Adjustment		
Disconnected impervious area (acre) =	0.02	
CN _{adjusted (1-year)} =		
High Density Only		
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =		
1-year, 24-hour storm (Peak Flow)		
Runoff (inches) = Q* _{1-year} =		
Volume of runoff (ft ³) =		
Volume change (ft ³) =		
Peak Discharge (cfs)= Q _{1-year} =		
2-year, 24-hour storm (LID)		
Runoff (inches) = Q* _{2-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{2-year} =		
10-year, 24-hour storm (DIA)		
Runoff (inches) = Q* _{10-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{10-year} =		



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DRAINAGE AREA 2
STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA	PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=								
Site Acreage within Drainage=								
One-year, 24-hour rainfall (in)=					2.86			
Two-year, 24-hour rainfall (in)=					3.46			
Ten-year, 24-hour storm (in)=					5.04			
Total Lake/Pond Area (Acres)=								
Lake/Pond Area not in the Tc flow path (Acres)=								
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								
Open Space, Good Condition								
Reforestation (in dedicated OS)								
Connected Impervious								
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)=								



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DRAINAGE AREA 2
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)=	#VALUE!	#VALUE!
RESULTS	PRE-DEVELOPMENT	POST-DEVELOPMENT
Composite Curve Number=		
Disconnected Impervious Adjustment		
Disconnected impervious area (acre) =		
CN _{adjusted (1-year)} =		
High Density Only		
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =		
1-year, 24-hour storm (Peak Flow)		
Runoff (inches) = Q [*] _{1-year} =		
Volume of runoff (ft ³) =		
Volume change (ft ³) =		
Peak Discharge (cfs)= Q _{1-year} =		
2-year, 24-hour storm (LID)		
Runoff (inches) = Q [*] _{2-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{2-year} =		
10-year, 24-hour storm (DIA)		
Runoff (inches) = Q [*] _{10-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{10-year} =		



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DRAINAGE AREA 3
STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA	PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=								
Site Acreage within Drainage=								
One-year, 24-hour rainfall (in)=					2.86			
Two-year, 24-hour rainfall (in)=					3.46			
Ten-year, 24-hour storm (in)=					5.04			
Total Lake/Pond Area (Acres)=								
Lake/Pond Area not in the Tc flow path (Acres)=								
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								
Open Space, Good Condition								
Reforestation (in dedicated OS)								
Connected Impervious								
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)=								



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DRAINAGE AREA 3
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)=	#VALUE!	#VALUE!
RESULTS	PRE-DEVELOPMENT	POST-DEVELOPMENT
Composite Curve Number=		
Disconnected Impervious Adjustment		
Disconnected impervious area (acre) =		
CN _{adjusted (1-year)} =		
High Density Only		
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =		
1-year, 24-hour storm (Peak Flow)		
Runoff (inches) = Q* _{1-year} =		
Volume of runoff (ft ³) =		
Volume change (ft ³) =		
Peak Discharge (cfs)= Q* _{1-year} =		
2-year, 24-hour storm (LID)		
Runoff (inches) = Q* _{2-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q* _{2-year} =		
10-year, 24-hour storm (DIA)		
Runoff (inches) = Q* _{10-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q* _{10-year} =		



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DRAINAGE AREA 4
STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA	PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=								
Site Acreage within Drainage=								
One-year, 24-hour rainfall (in)=	2.86							
Two-year, 24-hour rainfall (in)=	3.46							
Ten-year, 24-hour storm (in)=	5.04							
Total Lake/Pond Area (Acres)=								
Lake/Pond Area not in the Tc flow path (Acres)=								
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								
Open Space, Good Condition								
Reforestation (in dedicated OS)								
Connected Impervious								
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)=								



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DRAINAGE AREA 4
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)=		
RESULTS		
	PRE-DEVELOPMENT	POST-DEVELOPMENT
Composite Curve Number=		
Disconnected Impervious Adjustment		
Disconnected impervious area (acre) =		
CN _{adjusted (1-year)} =		
High Density Only		
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =		
1-year, 24-hour storm (Peak Flow)		
Runoff (inches) = Q* _{1-year} =		
Volume of runoff (ft ³) =		
Volume change (ft ³) =		
Peak Discharge (cfs)= Q _{1-year} =		
2-year, 24-hour storm (LID)		
Runoff (inches) = Q* _{2-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{2-year} =		
10-year, 24-hour storm (DIA)		
Runoff (inches) = Q* _{10-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{10-year} =		



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DRAINAGE AREA 5
STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA	PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=								
Site Acreage within Drainage=								
One-year, 24-hour rainfall (in)=					2.86			
Two-year, 24-hour rainfall (in)=					3.46			
Ten-year, 24-hour storm (in)=					5.04			
Total Lake/Pond Area (Acres)=								
Lake/Pond Area not in the Tc flow path (Acres)=								
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								
Open Space, Good Condition								
Reforestation (in dedicated OS)								
Connected Impervious								
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)=								



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DRAINAGE AREA 5
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)=	0.00	0.00
RESULTS	PRE-DEVELOPMENT	POST-DEVELOPMENT
Composite Curve Number=		
Disconnected Impervious Adjustment		
Disconnected impervious area (acre) =		
CN _{adjusted (1-year)} =		
High Density Only		
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =		
1-year, 24-hour storm (Peak Flow)		
Runoff (inches) = Q [*] _{1-year} =		
Volume of runoff (ft ³) =		
Volume change (ft ³) =		
Peak Discharge (cfs)= Q _{1-year} =		
2-year, 24-hour storm (LID)		
Runoff (inches) = Q [*] _{2-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{2-year} =		
10-year, 24-hour storm (DIA)		
Runoff (inches) = Q [*] _{10-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{10-year} =		



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DRAINAGE AREA 6
STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA	PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=								
Site Acreage within Drainage=								
One-year, 24-hour rainfall (in)=					2.86			
Two-year, 24-hour rainfall (in)=					3.46			
Ten-year, 24-hour storm (in)=					5.04			
Total Lake/Pond Area (Acres)=								
Lake/Pond Area not in the Tc flow path (Acres)=								
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								
Open Space, Good Condition								
Reforestation (in dedicated OS)								
Connected Impervious								
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)=								



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DRAINAGE AREA 6
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)=	0.00	0.00
RESULTS	PRE-DEVELOPMENT	POST-DEVELOPMENT
Composite Curve Number=		
Disconnected Impervious Adjustment		
Disconnected impervious area (acre) =		
CN _{adjusted (1-year)} =		
High Density Only		
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =		
1-year, 24-hour storm (Peak Flow)		
Runoff (inches) = Q* _{1-year} =		
Volume of runoff (ft ³) =		
Volume change (ft ³) =		
Peak Discharge (cfs)= Q* _{1-year} =		
2-year, 24-hour storm (LID)		
Runoff (inches) = Q* _{2-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q* _{2-year} =		
10-year, 24-hour storm (DIA)		
Runoff (inches) = Q* _{10-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q* _{10-year} =		



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DRAINAGE AREA 7
STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA	PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=								
Site Acreage within Drainage=								
One-year, 24-hour rainfall (in)=					2.86			
Two-year, 24-hour rainfall (in)=					3.46			
Ten-year, 24-hour storm (in)=					5.04			
Total Lake/Pond Area (Acres)=								
Lake/Pond Area not in the Tc flow path (Acres)=								
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								
Open Space, Good Condition								
Reforestation (in dedicated OS)								
Connected Impervious								
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)=								



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DRAINAGE AREA 7
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)=		
RESULTS		
	PRE-DEVELOPMENT	POST-DEVELOPMENT
Composite Curve Number=		
Disconnected Impervious Adjustment		
Disconnected impervious area (acre) =		
CN _{adjusted (1-year)} =		
High Density Only		
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =		
1-year, 24-hour storm (Peak Flow)		
Runoff (inches) = Q* _{1-year} =		
Volume of runoff (ft ³) =		
Volume change (ft ³) =		
Peak Discharge (cfs)= Q _{1-year} =		
2-year, 24-hour storm (LID)		
Runoff (inches) = Q* _{2-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{2-year} =		
10-year, 24-hour storm (DIA)		
Runoff (inches) = Q* _{10-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{10-year} =		



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DRAINAGE AREA 8
STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA	PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=								
Site Acreage within Drainage=								
One-year, 24-hour rainfall (in)=					2.86			
Two-year, 24-hour rainfall (in)=					3.46			
Ten-year, 24-hour storm (in)=					5.04			
Total Lake/Pond Area (Acres)=								
Lake/Pond Area not in the Tc flow path (Acres)=								
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								
Open Space, Good Condition								
Reforestation (in dedicated OS)								
Connected Impervious								
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)=								



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DRAINAGE AREA 8
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)=	0.00	0.00
RESULTS	PRE-DEVELOPMENT	POST-DEVELOPMENT
Composite Curve Number=		
Disconnected Impervious Adjustment		
Disconnected impervious area (acre) =		
CN _{adjusted (1-year)} =		
High Density Only		
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =		
1-year, 24-hour storm (Peak Flow)		
Runoff (inches) = Q* _{1-year} =		
Volume of runoff (ft ³) =		
Volume change (ft ³) =		
Peak Discharge (cfs)= Q _{1-year} =		
2-year, 24-hour storm (LID)		
Runoff (inches) = Q* _{2-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{2-year} =		
10-year, 24-hour storm (DIA)		
Runoff (inches) = Q* _{10-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{10-year} =		



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DRAINAGE AREA 9
STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA	PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=								
Site Acreage within Drainage=								
One-year, 24-hour rainfall (in)=	2.86							
Two-year, 24-hour rainfall (in)=	3.46							
Ten-year, 24-hour storm (in)=	5.04							
Total Lake/Pond Area (Acres)=								
Lake/Pond Area not in the Tc flow path (Acres)=								
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								
Open Space, Good Condition								
Reforestation (in dedicated OS)								
Connected Impervious								
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)=								



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DRAINAGE AREA 9
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)=		
RESULTS		
	PRE-DEVELOPMENT	POST-DEVELOPMENT
Composite Curve Number=		
Disconnected Impervious Adjustment		
Disconnected impervious area (acre) =		
CN _{adjusted (1-year)} =		
High Density Only		
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =		
1-year, 24-hour storm (Peak Flow)		
Runoff (inches) = Q* _{1-year} =		
Volume of runoff (ft ³) =		
Volume change (ft ³) =		
Peak Discharge (cfs)= Q _{1-year} =		
2-year, 24-hour storm (LID)		
Runoff (inches) = Q* _{2-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{2-year} =		
10-year, 24-hour storm (DIA)		
Runoff (inches) = Q* _{10-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{10-year} =		



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DRAINAGE AREA 10
STORMWATER PRE-POST CALCULATIONS

LAND USE & SITE DATA	PRE-DEVELOPMENT				POST-DEVELOPMENT			
Drainage Area (Acres)=								
Site Acreage within Drainage=								
One-year, 24-hour rainfall (in)=					2.86			
Two-year, 24-hour rainfall (in)=					3.46			
Ten-year, 24-hour storm (in)=					5.04			
Total Lake/Pond Area (Acres)=								
Lake/Pond Area not in the Tc flow path (Acres)=								
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								
Open Space, Good Condition								
Reforestation (in dedicated OS)								
Connected Impervious								
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)=								



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**DRAINAGE AREA 10
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)=	0.00	0.00
RESULTS	PRE-DEVELOPMENT	POST-DEVELOPMENT
Composite Curve Number=		
Disconnected Impervious Adjustment		
Disconnected impervious area (acre) =		
CN _{adjusted} (1-year)=		
High Density Only		
Volume of runoff from 1" rainfall for DA HIGH DENSITY REQUIREMENT = (ft ³) =		
1-year, 24-hour storm (Peak Flow)		
Runoff (inches) = Q [*] _{1-year} =		
Volume of runoff (ft ³) =		
Volume change (ft ³) =		
Peak Discharge (cfs)= Q _{1-year} =		
2-year, 24-hour storm (LID)		
Runoff (inches) = Q [*] _{2-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{2-year} =		
10-year, 24-hour storm (DIA)		
Runoff (inches) = Q [*] _{10-year} =		
Volume of runoff (ft ³) =		
Peak Discharge (cfs)= Q _{10-year} =		



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**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) = $Q_{pre,1-year}$ =											
Peak Flow (cfs) = Q_{1-year} =											
Post-Development (1-year, 24-hour storm)											
Proposed Impervious Surface (acre) =	0.73										
Runoff (in) = Q_{1-year} =											
Peak Flow (cfs) = Q_{1-year} =											
Increase in volume per DA (ft ³)_1-yr storm =											
Minimum Volume to be Managed for DA HIGH DENSITY REQUIREMENT = (ft ³) =											
TARGET CURVE NUMBER (TCN)											
Site Data											
SITE \SOIL COMPOSITION											
HYDROLOGIC SOIL GROUP				<u>Site Area</u>	<u>%</u>	<u>Target CN</u>					
A				0.00	0%	N/A					
B				0.00	0%	N/A					
C				0.00	0%	N/A					
D				1.14	100%	N/A					
Total Site Area (acres) =				1.14							
Percent BUA (Includes Existing Lakes/Pond Areas) =				32%							
Project Density =				High							
Target Curve Number (TCN) =				N/A							
$CN_{adjusted (1-year)}$ =											
Minimum Volume to be Managed (Total Site) Per TCN Requirement = ft ³ =											
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			0.41			0.33				
Open Space, Good Condition	0.6			0.00			0.00				
Reforestation (in dedicated OS)	0.6			0.00			0.00				
Impervious	21.2			0.73			15.48				
SITE NITROGEN LOADING RATE (lbs/ac/yr) =				13.86							
Nitrogen Load (lbs/yr) =				15.80							
TOTAL SITE NITROGEN TO MITIGATE (lbs/yr)_Wendell Only =				11.70							
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=			1.12
DA1 Off-Site Acreage=			0.02
Total Required Storage Volume for Site TCN Requirement (ft ³)=			
Total Required Storage Volume for DA1 1" Rainfall for High Density (ft ³)=			
Will site use underground detention/cistern?	Yes	Enter % of the year water will be reused=	10% <small>Note: Supporting information/details should be submitted to demonstrate water usage.</small>

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	0.41									
Open Space, Good Condition										
Reforestation (in dedicated OS)										
Impervious	0.71									

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)
Bioretention	Stormwater Wetlands	2,523	2,600	40%	15.38	6.15	48
Underground Detention	Infiltration Device			30%	9.23	2.77	48
Ex. Wet Pond	Wet Detention Basin			25%	6.46	1.61	48
				0%	4.84	0.00	
				0%	4.84	0.00	
Total Nitrogen remaining leaving the subbasin (lbs):				4.84			

Sub-DA1(b) BMP(s)							
<small>If Sub-DA1(b) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):</small>							
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):							

Sub-DA1 (c) BMP(s)							
<small>If Sub-DA1(c) is connected to upstream subbasin(s), enter the nitrogen leaving the most upstream subbasin(lbs):</small>							
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):							



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**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 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):							
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 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):							
DA1 BMP SUMMARY							
Total Volume Treated (ft ³)=				#VALUE!			
Nitrogen Mitigated(lbs)=				10.54			
1-year, 24-hour storm							
Post BMP Volume of Runoff (ft ³) _(1-year) =							
Post BMP Runoff (inches) = Q* _(1-year) =							
Post BMP CN _(1-year) =							
Post BMP Peak Discharge (cfs)= Q _{1-year} =							
2-year, 24-hour storm (LID)							
Post BMP Volume of Runoff (ft ³) _(2-year) =							
Post BMP Runoff (inches) = Q* _(2-year) =							
Post BMP CN _(2-year) =							
Post BMP Peak Discharge (cfs)= Q _(2-year) =							
10-year, 24-hour storm (DIA)							
Post BMP Volume of Runoff (ft ³) _(10-year) =							
Post BMP Runoff (inches) = Q* _(10-year) =							
Post BMP CN _(10-year) =							
Post BMP Peak Discharge (cfs)= Q _(10-year) =							



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**DRAINAGE AREA 2
BMP CALCULATIONS**

DRAINAGE AREA 1 - BMP DEVICES AND ADJUSTMENTS											
DA2 Site Acreage=											
DA2 Off-Site Acreage=		#VALUE!									
Total Required Storage Volume TCN Requirement (ft ³)=											
Total Required Storage Volume for DA2 1" Rainfall for High Density (ft ³)=											
Will site use underground detention/cistern?	No	Enter % of the year water will be reused=	0%		Note: Supporting information/details should be submitted to demonstrate water usage.						
ENTER ACREAGE FOR ALL SUB-DRAINAGE AREAS IN DA											
	HSG	Sub-DA2(a) (Ac)		Sub-DA2(b) (Ac)		Sub-DA2(c) (Ac)		Sub-DA2(d) (Ac)		Sub-DA2(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											
Open Space, Good Condition											
Reforestation (in dedicated OS)											
Impervious											
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 <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(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 <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 (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 <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):											



**DRAINAGE AREA 2
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 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):							
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 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):							
DA2 BMP SUMMARY							
Total Volume Treated (ft ³)=							
Nitrogen Mitigated(lbs)=							
1-year, 24-hour storm							
Post BMP Volume of Runoff (ft ³) _(1-year) =							
Post BMP Runoff (inches) = Q* _(1-year) =							
Post BMP CN _(1-year) =							
Post BMP Peak Discharge (cfs)= Q _{1-year} =							
2-year, 24-hour storm (LID)							
Post BMP Volume of Runoff (ft ³) _(2-year) =							
Post BMP Runoff (inches) = Q* _(2-year) =							
Post BMP CN _(2-year) =							
Post BMP Peak Discharge (cfs)= Q _(2-year) =							
10-year, 24-hour storm (DIA)							
Post BMP Volume of Runoff (ft ³) _(10-year) =							
Post BMP Runoff (inches) = Q* _(10-year) =							
Post BMP CN _(10-year) =							
Post BMP Peak Discharge (cfs)= Q _(10-year) =							



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**DRAINAGE AREA 3
BMP CALCULATIONS**

DRAINAGE AREA 1 - BMP DEVICES AND ADJUSTMENTS			
DA3 Site Acreage=			
DA3 Off-Site Acreage=	#VALUE!		
Total Required Storage Volume TCN Requirement (ft ³)=			
Total Required Storage Volume for DA3 1" Rainfall for High Density (ft ³)=			
Will site use underground detention/cistern?	No	Enter % of the year water will be reused=	0%
Note: Supporting information/details should be submitted to demonstrate water usage.			

ENTER ACREAGE FOR ALL SUB-DRAINAGE AREAS IN DA

HSG	Sub-DA3(a) (Ac)		Sub-DA3(b) (Ac)		Sub-DA3(c) (Ac)		Sub-DA3(d) (Ac)		Sub-DA3(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										
Open Space, Good Condition										
Reforestation (in dedicated OS)										
Impervious										

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 <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	
Total Nitrogen remaining leaving the subbasin (lbs):							

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 <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	
Total Nitrogen remaining leaving the subbasin (lbs):							

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 <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	
Total Nitrogen remaining leaving the subbasin (lbs):							



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**DRAINAGE AREA 3
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 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):							
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 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):							
DA3 BMP SUMMARY							
Total Volume Treated (ft ³)=							
Nitrogen Mitigated(lbs)=							
1-year, 24-hour storm							
Post BMP Volume of Runoff (ft ³) _(1-year) =							
Post BMP Runoff (inches) = Q* _(1-year) =							
Post BMP CN _(1-year) =							
Post BMP Peak Discharge (cfs)= Q _{1-year} =							
2-year, 24-hour storm (LID)							
Post BMP Volume of Runoff (ft ³) _(2-year) =							
Post BMP Runoff (inches) = Q* _(2-year) =							
Post BMP CN _(2-year) =							
Post BMP Peak Discharge (cfs)= Q _(2-year) =							
10-year, 24-hour storm (DIA)							
Post BMP Volume of Runoff (ft ³) _(10-year) =							
Post BMP Runoff (inches) = Q* _(10-year) =							
Post BMP CN _(10-year) =							
Post BMP Peak Discharge (cfs)= Q _(10-year) =							



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**DRAINAGE AREA 4
BMP CALCULATIONS**

DRAINAGE AREA 1 - BMP DEVICES AND ADJUSTMENTS											
DA4 Site Acreage=											
DA4 Off-Site Acreage=											
Total Required Storage Volume TCN Requirement (ft ³)=											
Total Required Storage Volume for DA4 1" Rainfall for High Density (ft ³)=											
Will site use underground detention/cistern?		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-DA4(a) (Ac)		Sub-DA4(b) (Ac)		Sub-DA4(c) (Ac)		Sub-DA4(d) (Ac)		Sub-DA4(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											
Open Space, Good Condition											
Reforestation (in dedicated OS)											
Impervious											
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 <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(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 <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 (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 <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):											



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**DRAINAGE AREA 4
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 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):							
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 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):							
DA4 BMP SUMMARY							
Total Volume Treated (ft ³)=							
Nitrogen Mitigated(lbs)=							
1-year, 24-hour storm							
Post BMP Volume of Runoff (ft ³) _(1-year) =							
Post BMP Runoff (inches) = Q* _(1-year) =							
Post BMP CN _(1-year) =							
Post BMP Peak Discharge (cfs)= Q _{1-year} =							
2-year, 24-hour storm (LID)							
Post BMP Volume of Runoff (ft ³) _(2-year) =							
Post BMP Runoff (inches) = Q* _(2-year) =							
Post BMP CN _(2-year) =							
Post BMP Peak Discharge (cfs)= Q _(2-year) =							
10-year, 24-hour storm (DIA)							
Post BMP Volume of Runoff (ft ³) _(10-year) =							
Post BMP Runoff (inches) = Q* _(10-year) =							
Post BMP CN _(10-year) =							
Post BMP Peak Discharge (cfs)= Q _(10-year) =							



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**DRAINAGE AREA 5
BMP CALCULATIONS**

DRAINAGE AREA 1 - BMP DEVICES AND ADJUSTMENTS										
DA5 Site Acreage=										
DA5 Off-Site Acreage=										
Total Required Storage Volume TCN Requirement (ft ³)=										
Total Required Storage Volume for DA5 1" Rainfall for High Density (ft ³)=										
Will site use underground detention/cistern?		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-DA5(a) (Ac)		Sub-DA5(b) (Ac)		Sub-DA5(c) (Ac)		Sub-DA5(d) (Ac)		Sub-DA5(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										
Open Space, Good Condition										
Reforestation (in dedicated OS)										
Impervious										
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)			
				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(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)			
				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 (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):										



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**DRAINAGE AREA 5
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 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):							
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 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):							
DA5 BMP SUMMARY							
Total Volume Treated (ft ³)=							
Nitrogen Mitigated(lbs)=							
1-year, 24-hour storm							
Post BMP Volume of Runoff (ft ³) _(1-year) =							
Post BMP Runoff (inches) = Q* _(1-year) =							
Post BMP CN _(1-year) =							
Post BMP Peak Discharge (cfs)= Q _{1-year} =							
2-year, 24-hour storm (LID)							
Post BMP Volume of Runoff (ft ³) _(2-year) =							
Post BMP Runoff (inches) = Q* _(2-year) =							
Post BMP CN _(2-year) =							
Post BMP Peak Discharge (cfs)= Q _(2-year) =							
10-year, 24-hour storm (DIA)							
Post BMP Volume of Runoff (ft ³) _(10-year) =							
Post BMP Runoff (inches) = Q* _(10-year) =							
Post BMP CN _(10-year) =							
Post BMP Peak Discharge (cfs)= Q _(10-year) =							



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**DRAINAGE AREA 6
BMP CALCULATIONS**

DRAINAGE AREA 1 - BMP DEVICES AND ADJUSTMENTS										
DA6 Site Acreage=										
DA6 Off-Site Acreage=										
Total Required Storage Volume TCN Requirement (ft ³)=										
Total Required Storage Volume for DA6 1" Rainfall for High Density (ft ³)=										
Will site use underground detention/cistern?		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-DA6(a) (Ac)		Sub-DA6(b) (Ac)		Sub-DA6(c) (Ac)		Sub-DA6(d) (Ac)		Sub-DA6(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										
Open Space, Good Condition										
Reforestation (in dedicated OS)										
Impervious										
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)			
				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(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)			
				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 (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):										



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**DRAINAGE AREA 6
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 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):							
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 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):							
DA6 BMP SUMMARY							
Total Volume Treated (ft ³)=							
Nitrogen Mitigated(lbs)=							
1-year, 24-hour storm							
Post BMP Volume of Runoff (ft ³) _(1-year) =							
Post BMP Runoff (inches) = Q* _(1-year) =							
Post BMP CN _(1-year) =							
Post BMP Peak Discharge (cfs)= Q _{1-year} =							
2-year, 24-hour storm (LID)							
Post BMP Volume of Runoff (ft ³) _(2-year) =							
Post BMP Runoff (inches) = Q* _(2-year) =							
Post BMP CN _(2-year) =							
Post BMP Peak Discharge (cfs)= Q _(2-year) =							
10-year, 24-hour storm (DIA)							
Post BMP Volume of Runoff (ft ³) _(10-year) =							
Post BMP Runoff (inches) = Q* _(10-year) =							
Post BMP CN _(10-year) =							
Post BMP Peak Discharge (cfs)= Q _(10-year) =							



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**DRAINAGE AREA 7
BMP CALCULATIONS**

DRAINAGE AREA 1 - BMP DEVICES AND ADJUSTMENTS										
DA7 Site Acreage=										
DA7 Off-Site Acreage=										
Total Required Storage Volume TCN Requirement (ft ³)=										
Total Required Storage Volume for DA7 1" Rainfall for High Density (ft ³)=										
Will site use underground detention/cistern?		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-DA7(a) (Ac)		Sub-DA7(b) (Ac)		Sub-DA7(c) (Ac)		Sub-DA7(d) (Ac)		Sub-DA7(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										
Open Space, Good Condition										
Reforestation (in dedicated OS)										
Impervious										
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)			
				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(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)			
				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 (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):										



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**DRAINAGE AREA 7
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 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):							
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 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):							
DA7 BMP SUMMARY							
Total Volume Treated (ft ³)=							
Nitrogen Mitigated(lbs)=							
1-year, 24-hour storm							
Post BMP Volume of Runoff (ft ³) _(1-year) =							
Post BMP Runoff (inches) = Q* _(1-year) =							
Post BMP CN _(1-year) =							
Post BMP Peak Discharge (cfs)= Q _{1-year} =							
2-year, 24-hour storm (LID)							
Post BMP Volume of Runoff (ft ³) _(2-year) =							
Post BMP Runoff (inches) = Q* _(2-year) =							
Post BMP CN _(2-year) =							
Post BMP Peak Discharge (cfs)= Q _(2-year) =							
10-year, 24-hour storm (DIA)							
Post BMP Volume of Runoff (ft ³) _(10-year) =							
Post BMP Runoff (inches) = Q* _(10-year) =							
Post BMP CN _(10-year) =							
Post BMP Peak Discharge (cfs)= Q _(10-year) =							



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**DRAINAGE AREA 8
BMP CALCULATIONS**

DRAINAGE AREA 1 - BMP DEVICES AND ADJUSTMENTS										
DA8 Site Acreage=										
DA8 Off-Site Acreage=										
Total Required Storage Volume TCN Requirement (ft ³)=										
Total Required Storage Volume for DA8 1" Rainfall for High Density (ft ³)=										
Will site use underground detention/cistern?		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-DA8(a) (Ac)		Sub-DA8(b) (Ac)		Sub-DA8(c) (Ac)		Sub-DA8(d) (Ac)		Sub-DA8(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										
Open Space, Good Condition										
Reforestation (in dedicated OS)										
Impervious										
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)			
				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(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)			
				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 (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):										



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**DRAINAGE AREA 8
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 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):							
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 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):							
DA8 BMP SUMMARY							
Total Volume Treated (ft ³)=							
Nitrogen Mitigated(lbs)=							
1-year, 24-hour storm							
Post BMP Volume of Runoff (ft ³) _(1-year) =							
Post BMP Runoff (inches) = Q* _(1-year) =							
Post BMP CN _(1-year) =							
Post BMP Peak Discharge (cfs)= Q _{1-year} =							
2-year, 24-hour storm (LID)							
Post BMP Volume of Runoff (ft ³) _(2-year) =							
Post BMP Runoff (inches) = Q* _(2-year) =							
Post BMP CN _(2-year) =							
Post BMP Peak Discharge (cfs)= Q _(2-year) =							
10-year, 24-hour storm (DIA)							
Post BMP Volume of Runoff (ft ³) _(10-year) =							
Post BMP Runoff (inches) = Q* _(10-year) =							
Post BMP CN _(10-year) =							
Post BMP Peak Discharge (cfs)= Q _(10-year) =							



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**DRAINAGE AREA 9
BMP CALCULATIONS**

DRAINAGE AREA 1 - BMP DEVICES AND ADJUSTMENTS										
DA9 Site Acreage=										
DA9 Off-Site Acreage=										
Total Required Storage Volume TCN Requirement (ft ³)=										
Total Required Storage Volume for DA9 1" Rainfall for High Density (ft ³)=										
Will site use underground detention/cistern?		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-DA9(a) (Ac)		Sub-DA9(b) (Ac)		Sub-DA9(c) (Ac)		Sub-DA9(d) (Ac)		Sub-DA9(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										
Open Space, Good Condition										
Reforestation (in dedicated OS)										
Impervious										
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 <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(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 <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 (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 <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):										



**DRAINAGE AREA 9
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 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):							
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 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):							
DA9 BMP SUMMARY							
Total Volume Treated (ft ³)=							
Nitrogen Mitigated(lbs)=							
1-year, 24-hour storm							
Post BMP Volume of Runoff (ft ³) _(1-year) =							
Post BMP Runoff (inches) = Q* _(1-year) =							
Post BMP CN _(1-year) =							
Post BMP Peak Discharge (cfs)= Q _{1-year} =							
2-year, 24-hour storm (LID)							
Post BMP Volume of Runoff (ft ³) _(2-year) =							
Post BMP Runoff (inches) = Q* _(2-year) =							
Post BMP CN _(2-year) =							
Post BMP Peak Discharge (cfs)= Q _(2-year) =							
10-year, 24-hour storm (DIA)							
Post BMP Volume of Runoff (ft ³) _(10-year) =							
Post BMP Runoff (inches) = Q* _(10-year) =							
Post BMP CN _(10-year) =							
Post BMP Peak Discharge (cfs)= Q _(10-year) =							



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**DRAINAGE AREA 10
BMP CALCULATIONS**

DRAINAGE AREA 1 - BMP DEVICES AND ADJUSTMENTS										
DA10 Site Acreage=										
DA10 Off-Site Acreage=										
Total Required Storage Volume TCN Requirement (ft ³)=										
Total Required Storage Volume for DA10 1" Rainfall for High Density (ft ³)=										
Will site use underground detention/cistern?		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-DA10(a) (Ac)		Sub-DA10(b) (Ac)		Sub-DA10(c) (Ac)		Sub-DA10(d) (Ac)		Sub-DA10(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										
Open Space, Good Condition										
Reforestation (in dedicated OS)										
Impervious										
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)			
				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(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)			
				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 (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 10
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 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):							
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 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):							
DA10 BMP SUMMARY							
Total Volume Treated (ft ³)=							
Nitrogen Mitigated(lbs)=							
1-year, 24-hour storm							
Post BMP Volume of Runoff (ft ³) _(1-year) =							
Post BMP Runoff (inches) = Q* _(1-year) =							
Post BMP CN _(1-year) =							
Post BMP Peak Discharge (cfs)= Q _{1-year} =							
2-year, 24-hour storm (LID)							
Post BMP Volume of Runoff (ft ³) _(2-year) =							
Post BMP Runoff (inches) = Q* _(2-year) =							
Post BMP CN _(2-year) =							
Post BMP Peak Discharge (cfs)= Q _(2-year) =							
10-year, 24-hour storm (DIA)							
Post BMP Volume of Runoff (ft ³) _(10-year) =							
Post BMP Runoff (inches) = Q* _(10-year) =							
Post BMP CN _(10-year) =							
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} =										
Peak Flow (cfs)= Q_{1-year} =										
Post-Development (1-year, 24-hour storm)										
Target Curve Number (TCN) =	NA									
Post BMP Runoff (inches) = $Q^*_{(1-year)}$ =										
Post BMP Peak Discharge (cfs)= Q_{1-year} =										
Post BMP $CN_{(1-year)}$ =										
Post-BMP Nitrogen Loading										
TOTAL SITE NITROGEN MITIGATED (lbs)=	10.54									
SITE NITROGEN LOADING RATE (lbs/ac/yr)=	4.62									
TOTAL SITE NITROGEN LEFT TO MITIGATE_Wendell Only (lbs)=	1.16									



LOW IMPACT DEVELOPMENT SUMMARY

DRAINAGE AREA SUMMARIES											
DRAINAGE AREA:	DA1	DA2	DA3	DA4	DA5	DA6	DA7	DA8	DA9	DA10	
Pre-Development											
Runoff (in) = Q_{pre_2-year} =											
Total Runoff Volume (ft ³) =											
Peak Flow (cfs) = Q_{2-year} =											
Post-Development											
2-year, 24-hour storm (LID)											
Post BMP Runoff (inches) = $Q^*_{(2-year)}$ =											
Post BMP Peak Discharge (cfs) = $Q_{(2-year)}$ =											
Post BMP Volume of Runoff (ft ³) _(2-year) =											
Does Runoff meet LID requirements?											
Does Peak Flow meet LID requirements?											
Does Runoff Volume meet LID requirements?											
SITE SUMMARY											
Site Data											
Target CN =	N/A										
Post-Development CN =											
Does CN meet LID requirements?											
LID CHECKLIST											
Complete the below checklist if all requirements have been met above:											
<p>LID Narrative (limit to 600 characters - attach additional pages with submittal if necessary): Describe in detail how the proposed development has utilized "Natural Site Design". Narrative should include the location of site buildings, roads and other land disturbances in the least environmentally-sensitive areas, preservation of steep slopes, and preservation of naturally well draining soils and other hydrologically valuable features.</p>											
LID Techniques (check all that apply)											
At least one of the following techniques must be used to achieve LID classification:											
<input checked="" type="checkbox"/>	Bioretention										
<input type="checkbox"/>	On-site infiltration										
Additional LID Techniques (check all that apply)											
At least two (one for Wendell) of the following techniques must be used to achieve LID classification:											
<input type="checkbox"/>	Retention of 50% of vegetated area, including open space, landscaping or forests										
<input type="checkbox"/>	Use of permeable pavement for <u>all</u> private driveways, private roads, sidewalks and parking areas										
<input type="checkbox"/>	Installation of one rain cistern per lot or three rain barrels per lot										
<input type="checkbox"/>	Installation of vegetative roofs										
<input type="checkbox"/>	Increasing all buffers in the Riparian buffer zone or the Flood Protection Zone, whichever is greater, by 50 feet										
<input type="checkbox"/>	Use of reclaimed water for all buildings										
<input type="checkbox"/>	Use of innovative LID techniques subject to approval										



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DOWNSTREAM IMPACT ANALYSIS SITE SUMMARY

DRAINAGE AREA SUMMARIES										
DRAINAGE AREA:	DA1	DA2	DA3	DA4	DA5	DA6	DA7	DA8	DA9	DA10
Pre-Development										
Peak Discharge (cfs)= $Q_{10\text{-year}}$ =										
Volume of Runoff (ft ³) _(10-year) =										
Post-Development										
10-year, 24-hour storm (DIA)										
Post BMP Peak Discharge (cfs)= $Q_{(10\text{-year})}$ =										
Post BMP Volume of Runoff (ft ³) _(10-year) =										

CALCULATIONS AND REFERENCE

TARGET CURVE NUMBER				
MAXIMUM CURVE NUMBER AFTER DEVELOPMENT				
PROJECT DENSITY	A	B	C	D
Ultra-Low	43	63	76	81
Low	48	66	78	83
High	N/A	N/A	N/A	N/A

WEIGHTED CURVE NUMBER				
RUNOFF CURVE NUMBERS FOR URBAN AREAS				
LAND USE	A	B	C	D
Pasture	39	61	74	80
Woods, Poor Condition ¹	45	66	77	83
Woods, Fair Condition ²	36	60	73	79
Woods, Good Condition ³	30	55	70	77
Open Space, Poor Condition ⁴	68	79	86	89
Open Space, Fair Condition ⁵	49	69	79	84
Open Space, Good Condition ⁶	39	61	74	80
Reforestation (in dedicated OS) ⁷	30	55	70	77
Impervious ⁸	98	98	98	98

Notes:

- ¹ Poor Condition = Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.
- ² Fair Condition = Woods are grazed but not burned, and some forest litter covers the soil.
- ³ Good Condition = Woods that are protected from grazing, litter, and brush adequately cover the soil
- ⁴ Poor Condition = Grass Cover <50% (lawns, parks, golf courses, cemeteries, etc.)
- ⁵ Fair Condition = Grass Cover = 50% - 75% (lawns, parks, golf courses, cemeteries, etc.)
- ⁶ Good Condition = Grass Cover >75% (lawns, parks, golf courses, cemeteries, etc.)
- ⁷ Includes paved/gravel/compacted soil driveways and roads, roofs, etc.
- ⁸ Includes paved/gravel/compacted soil driveways and roads, roofs, etc.

SCS RUNOFF METHOD
$Q^* = (P - .2S)^2 / (P + .8S)$ <p>Where: Q^* = Runoff (in) P = Precipitation (in) S = Potential max retention after runoff begins (in) = (1000/CN)-10</p>
Notes:
Calculations used on Drainage Area Sheets

DISCRETE RUNOFF METHOD (HIGH DENSITY ONLY)
$Q^*_{High} = Q^*_{(imp)} \times DA_{(imp)} + Q^*_{(pervious)} \times DA_{(pervious)}$
$Q^*_{(imp)}$ = Runoff from Impervious Area (in) $DA_{(imp)}$ = Drainage from impervious area (acre) $Q^*_{(pervious)}$ = Runoff from pervious area (in) $DA_{(pervious)}$ = Drainage from pervious area (acre)

PEAK FLOW	
Method: TR-55 Graphical Peak Discharge Method for Type II Distribution	
$Q_p = q_u A_m Q^* F_p$ <p>Where: Q_p = Peak Discharge (cfs) q_u = Unit peak discharge (csm/in) <i>TR-55 Appendix F</i> A_m = Drainage Area (mi²) Q^* = runoff (inches) F_p = pond adjustment factor</p>	$\log(q_u) = C_0 + C_1 \log(T_c) + C_2 [\log(T_c)]^2$ <p>Where: C_0, C_1, C_2 = coefficient from Table F-1 T_c = time of concentration (hr)</p>
<p>Limitations: The watershed must be hydrologically homogeneous</p> <p>The watershed may have only one main stream or, if more than one, the branches must have nearly equal T_c's.</p> <p>The F_p factor can be applied only for ponds or swamps that are not in the T_c flow path</p> <p>This method should be used only if the weighted CN is greater than 40.</p> <p>When this method is used to develop estimates of peak discharge for both pre and post development, use the same procedure for estimating T_c.</p> <p>T_c values with this method may range from 0.1 to 10 hours.</p>	

TIME OF CONCENTRATION

$$T_1 = \frac{L}{3600V}$$

T_1 = travel time (hr)
 L = flow length (ft)
 V = average velocity (ft/s)
 3600 = conversion factor from seconds to hours

T_c = sum of T_1 values for consecutive flow segments
 $T_c = T_1 + T_2 + T_3 + \dots + T_m$

T_c = time of concentration (hr)
 m = # of flow segments

Note: Minimal 5 minute T_c

SHEET FLOW (FOR FLOW LESS THAN 300 FEET)	SHALLOW FLOW																																																																																																																																						
$T_1 = \frac{0.0007(nL)^{0.8}}{(P_2)^{0.5} s^{0.4}}$ <p> T_1 = travel time (hr) n = Manning's roughness coefficient (Table 3-1) L = flow length (ft) P_2 = 2-year, 24-hour rainfall (in) s = slope of hydraulic grade line (land slope, ft/ft) </p>	<p>Surface Cover</p> Unpaved: $V = 16.1345(s)^{0.5}$ Paved: $V = 20.3282(s)^{0.6}$ <p> V = Average Velocity (ft/s) s = slope of hydraulic grade line (watercourse slope, ft/ft) </p> $T_1 = \frac{L}{3600V}$ <p> T_1 = travel time (hr) L = flow length (ft) V = average velocity (ft/s) 3600 = conversion factor from seconds to hours </p>																																																																																																																																						
Modified Table 3-1 for Stormwater Tool	OPEN CHANNEL FLOW																																																																																																																																						
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DISCONNECTED IMPERVIOUS CALCULATION
$CN_{adjusted} = CN_p + [(P_{imp}/100)*(98-CN_p)*(1-(0.5*R))]$ <p>Where:</p> $CN_{adjusted} = \text{Composite Curve Number}$ $CN_p = \text{Pervious runoff curve number} = (PostCN - (Pimp/100)*98)/(1 - (Pimp/100))$ $P_{imp} = \text{Percent Imperviousness}$ $R = \text{ratio of unconnected impervious area to total impervious area}$

TABLE 4-1, SW BMP MANUAL BMP ABILITY FOR SW QUANTITY CONTROL		
BMP	TSS	TN
Bioretention without IWS	85%	35%
Bioretention with IWS	85%	40%
Stormwater Wetlands	85%	40%
Wet Detention Basin	85%	25%
Sand Filter	85%	35%
Filter Strip	25-40%	20%
Grass Swale	35%	20%
Restored Riparian Buffer	60%	30%
Infiltration Device	85%	30%
Dry Extended Detention Basin	50%	10%
Permeable Pavement	0%	0%
Rooftop Runoff Management (Excluding Cisterns)	0%	0%
Cistern/Underground Detention	See Note	100%

¹ Use of underground detention reduces total volume required for storage as well total nitrogen load. To receive total reduction, engineer must show year-round use of reclaimed water. If water is not reused year-round, a percent of the total reduction may be given (See DA BMP sheets).