

Date 6/6/2005
Last Revised: 5/10/2010
Developer Gregg Comstock, P.E., New Hampshire Department of Environmental Services

Purpose This program calculates pre and post development pollutant loads using the Simple Method.

Disclaimer **It is believed that this model functions as intended. However, Applicants using this model should be aware that they do so at their own risk. The NH Department of Environmental Services is not responsible for the use or interpretation of this information, nor for any inaccuracies. If errors are discovered they should be brought to the attention of DES.**

Instructions The tabs for data input sheets are shaded blue and are labeled "Pre-Dev_Sub Area Wksht", "Post-Dev_Sub Area Wksht", "Input_LU_A_Ja_C" and "Input_BMPs".

In the worksheets, only change values in cells that are shaded **BLUE**.

Use the "**Pre-Dev_Sub Area Wksht**" and "**Post-Dev_Sub Area Wksht**" to show how the % Impervious for each sub-area was calculated for pre and post development conditions respectively. Use one row for each land use type and sub -area number. The number of rows for a particular sub-area should be equal to the number of land uses in the sub-area. All rows for a particular sub-area should have the same BMP. If the impervious area is disconnected, or if the BMP is an infiltration BMP designed in accordance with the Alteration of Terrain (AoT) regulations, select "YES" in the column that asks this question. Otherwise, select "NO". The worksheets compute the composite % impervious for each row based on 0% impervious for pervious areas and 100% impervious for impervious areas. The sub-area numbers, and area and % impervious for each land use in a sub-area should then be input in the the "Input_LU_A_Ja_C" worksheet described below.

On the "**Input_LU_A_Ja_C**" worksheet, input general project information at the top (ie, date, project name, town, etc.). Then input the average annual precipitation in inches per year for the municipality closest to the proposed Activity.

The next few lines are provided to provide pollutant load reductions associated with use of low nutrient fertilizers under post development conditions. If low nutrient fertilizers are to be used input the proposed reduced post development fertilizer application rate in terms of lbs/acre/year. TP fertilizer application rates can be as low as zero since many NH soils have sufficient TP. For TN, the lowest fertilizer application rate is approximately 44 lbs/acre/year (i.e., ~ 1 lb/1000 sf/year) per the UNH Cooperative Extension. If pollutant reductions due low nutrient fertilizers are assumed, enforceable documents (i.e., deed restrictions) are required to help ensure that low nutrient fertilizer will actually be used once the project is operational.

Credit can only be taken for managed turf areas that are to be fertilized annually. This does not include one time fertilizer applications such stabilization of disturbed areas on construction projects. The fertilizer routine assumes that all managed turf area (i.e., lawns) that are fertilized annually use the standard fertilizer application rate shown in the table. These rates are from the Center for Watershed Protection Treatment Model (CWPTM) User's Manual. The routine first calculates the reduction from the standard application rates. Similar to the CWPTM, this reduction is then multiplied by 1) a "Compliance" factor to account for the fact not all citizens will likely comply with the low nutrient fertilizer restrictions and 2) the percent of applied fertilizer which is lost to runoff or infiltration. The final percent fertilizer reduction factor (%FR) is then used to calculate reductions in the TP and TN EMCs for each post development land use in each sub-area in accordance with the following equation.

$$EMC_{FR} = [(100 - \%MTURF) \times EMC_{NFR} + (\%MTURF \times (EMC_{NFR} - \%FR \times (EMC_{NFR} - EMC_{MIN})))] / 100$$

Where EMC_{FR} =Area Weighted Post Development Fertilizer Reduction EMC (calculated for each land use in each sub-area) ; $\%MTURF$ = Percent of each land use area in each sub-area that is managed turf that is fertilized annually; EMC_{NFR} is the EMC for land use prior to any fertilizer reduction and EMC_{MIN} is the minimum assumed post development EMC. EMC_{MIN} was set equal to the EMC for the Forest/Rural Open land use.

For any land use, the EMC_{FR} was not allowed to be less than the EMC_{MIN} unless the EMC_{NFR} was already less in which the minimum EMC_{FR} was set equal to the EMC_{NFR} . Finally EMC_{FR} were only calculated for land uses that are likely to have managed turf that is fertilized annually. Land uses excluded from fertilizer reduction calculations included roofs, forest/rural and water/wetlands since they are not expected to include any managed turf.

Then, based on the "Pre-Dev Sub Area Wksht", input the sub-area number, the Point of Analysis (PoA) number and then the area and % impervious (i.e., the impervious fraction Ia) for each land use in that sub-area for pre development conditions. Then do the same for the post development condition using the information from the "Post-Dev Sub Area Wksht" . The worksheet allows up to 25 different subareas for pre and post development conditions.

On the "**Input BMPs**" worksheet, input the BMP description for each subarea under pre and post development condition. Also input the overall removal efficiency for each pollutant of concern. If any subarea has BMPs in series with different removal efficiencies, input the highest removal efficiency for each pollutant of concern.

Once all input is complete, check the "**Overall Summary**" worksheet (the tab shaded red) for a summary of total pre and post development loading results. **Sub-Area Summary** worksheets for each pollutant are also provided. These can be copied and pasted into a new worksheet and used to create other summaries as needed (such as a summary of loads at each Point of Analysis).

See the guidance document for additional information.

Date (MM/DD/YYYY):	11/22/2016
Project Name:	Northern Pass Transmission - Transition Site #6
Town/City:	Bridgewater (Nearest Town)
Impacted Surface Waters:	Pemigewasset River
Applicant:	Northern Pass Transmission, LLC.
DES File #:	

Average Annual Precipitation P	47.75	inches	ONLY INPUT VALUES IN BLUE SHADED CELLS
Fraction of Annual Runoff events that produce runoff	0.90	(usually 0.9)	

Credit for Using Low Nutrient Fertilizer: If there are managed turf areas under post development conditions that are to be fertilized annually, reductions in post development nutrient (TP and TN) loadings can be realized by providing enforceable documents (i.e., deed restrictions) requiring land owners to use low nutrient fertilizer. To get low nutrient fertilizer pollutant reductions input the proposed reduced fertilizer application rates for post development development for TP and TN in the table below. Low nutrient fertilizers must have application rates less than the standard fertilizer application rate shown in the table. Then input the percent of each land use in each post development sub-area that is managed turf that is fertilized annually.

Fertilizer Reduction Calculator	
TP	TN
15.0	150.0
15.0	150.0
0.0%	0.0%
50%	50%
75%	75%
0.0%	0.0%
0.11	1.74

← Used to reduce EMCs for Post TP and Post TN for each land use in each Sub Area depending on percent of area that is managed turf that is fertilized annually

STANDARD FERTILIZER APPLICATION RATE (lbs/acre/year)
PROPOSED REDUCED FERTILIZER APPLICATION RATES FOR POST-DEVELOPMENT (lbs/acre/year)
 INITIAL PERCENT REDUCTION
 PERCENT OF CITIZENS THAT WILL COMPLY WITH REDUCED APPLICATION RATES
 PERCENT OF APPLIED FERTILIZER THAT IS LOST TO RUNOFF OR PERCOLATION
FINAL PERCENT FERTILIZER REDUCTION WITH COMPLIANCE AND RUNOFF RATES APPLIED (%FR)
 MINIMUM ASSUMED EMC = EMC_{MIN} (mg/L)

PRE-DEVELOPMENT CONDITIONS

POST-DEVELOPMENT CONDITIONS

	Area	Impervious Area	Area	Impervious Area	Area Fertilized Annually
Total Area (All Sub-Areas) (acres)	4.18	0.36	4.19	0.47	0.00

Insert information for 1st sub-area below

Sub_Area_ID	1- PRE	
Point of Analysis (PoA) Number	Pre 1	
Total Area for Sub-Area (acres)	4.18	0.36

Sub_Area_ID	1-POST		
Point of Analysis (PoA) Number	Post 1		
Total Area in Sub-Area (acres)	2.09	0.32	0.00

Land Use	Area	la	Land Use	Total Area for each Land Use	la	Percent of Area that is managed turf (i.e., fertilized annually)	Post-TP EMC	Post-TN EMC
	(acres)	(% Impervious)		(acres)	(% Impervious)	%	mg/L	mg/L
From HWG			From HWG					
Residential Roof	0.00	0.00%	Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	100.00%	Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	4.18	8.59%	Industrial (general)	2.09	15.41%	0.0%	0.40	2.50
From CDM			From CDM					
Agriculture and Pasture	0.00	0.00%	Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	0.00	0.00%	Forest/Rural Open	0.00	0.00%	0.0%	0.11	1.74
Highway	0.00	0.00%	Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 2nd sub-area below

Sub_Area_ID	2-PRE	
Point of Analysis (PoA) Number		
Total Area for Sub-Area (acres)	0.00	0.00

Sub_Area_ID	2-POST		
Point of Analysis (PoA) Number	Post 1		
Total Area in Sub-Area (acres)	2.10	0.15	0.00

Land Use	Area (acres)	Ia (% Impervious)
From HWG		
Residential Roof	0.00	0.00%
Commercial Roof	0.00	0.00%
Commercial/Res Parking	0.00	0.00%
Residential Street	0.00	0.00%
Urban Highway	0.00	0.00%
Lawns	0.00	0.00%
Driveway	0.00	0.00%
Residential (general)	0.00	0.00%
Commercial (general)	0.00	0.00%
Industrial (general)	0.00	0.00%
From CDM		
Agriculture and Pasture	0.00	0.00%
Commercial	0.00	0.00%
Forest/Rural Open	0.00	0.00%
Highway	0.00	0.00%
Industrial	0.00	0.00%
Medium Density Residential	0.00	0.00%
Urban Open	0.00	0.00%
Water/Wetland	0.00	0.00%

Land Use	Area (acres)	Ia (% Impervious)	Percent of Area that is managed turf (i.e., fertilized annually) %	Post-TP EMC mg/L	Post-TN EMC mg/L
From HWG					
Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	2.10	7.05%	0.0%	0.40	2.50
From CDM					
Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	0.00	0.00%	0.0%	0.11	1.74
Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Insert information for 3rd sub-area below

Sub_Area_ID		
Point of Analysis (PoA) Number		
Total Area for Sub-Area (acres)	0.00	0.00

Sub_Area_ID			
Point of Analysis (PoA) Number			
Total Area in Sub-Area (acres)	0.00	0.00	0.00

Land Use	Area (acres)	Ia (% Impervious)
From HWG		
Residential Roof	0.00	0.00%
Commercial Roof	0.00	0.00%
Commercial/Res Parking	0.00	0.00%
Residential Street	0.00	0.00%
Urban Highway	0.00	0.00%
Lawns	0.00	0.00%
Driveway	0.00	0.00%
Residential (general)	0.00	0.00%
Commercial (general)	0.00	0.00%
Industrial (general)	0.00	0.00%
From CDM		
Agriculture and Pasture	0.00	0.00%
Commercial	0.00	0.00%
Forest/Rural Open	0.00	0.00%
Highway	0.00	0.00%
Industrial	0.00	0.00%
Medium Density Residential	0.00	0.00%
Urban Open	0.00	0.00%
Water/Wetland	0.00	0.00%

Land Use	Area (acres)	Ia (% Impervious)	Percent of Area that is managed turf (i.e., fertilized annually) %	Post-TP EMC mg/L	Post-TN EMC mg/L
From HWG					
Residential Roof	0.00	0.00%	0.0%	0.11	1.50
Commercial Roof	0.00	0.00%	0.0%	0.14	2.10
Commercial/Res Parking	0.00	0.00%	0.0%	0.15	1.90
Residential Street	0.00	0.00%	0.0%	0.55	1.40
Urban Highway	0.00	0.00%	0.0%	0.32	3.00
Lawns	0.00	0.00%	0.0%	2.10	9.10
Driveway	0.00	0.00%	0.0%	0.56	2.10
Residential (general)	0.00	0.00%	0.0%	0.40	2.20
Commercial (general)	0.00	0.00%	0.0%	0.20	2.00
Industrial (general)	0.00	0.00%	0.0%	0.40	2.50
From CDM					
Agriculture and Pasture	0.00	0.00%	0.0%	0.37	5.98
Commercial	0.00	0.00%	0.0%	0.33	2.97
Forest/Rural Open	0.00	0.00%	0.0%	0.11	1.74
Highway	0.00	0.00%	0.0%	0.43	2.65
Industrial	0.00	0.00%	0.0%	0.32	3.97
Medium Density Residential	0.00	0.00%	0.0%	0.52	5.15
Urban Open	0.00	0.00%	0.0%	0.11	1.74
Water/Wetland	0.00	0.00%	0.0%	0.08	1.38

Date (MM/DD/YYYY): 11/22/2016
 Project Name: Northern Pass Transmission - Transition Site #6
 Town/City: Bridgewater (Nearest Town)
 Impacted Surface Waters: Pemigewasset River
 Applicant: Northern Pass Transmission, LLC.
 DES File #:

ONLY CHANGE VALUES SHADED IN BLUE

PRE DEVELOPMENT		INPUT BMP DESCRIPTIONS		INPUT OVERALL REMOVAL EFFICIENCIES (%) FOR POLLUTANTS OF CONCERN		
Sub-Area			TSS	TP	TN	
1-PRE			0%	0%	0%	
2-PRE			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
12-PRE			0%	0%	0%	
13-PRE			0%	0%	0%	
14-PRE			0%	0%	0%	
15-PRE			0%	0%	0%	
16-PRE			0%	0%	0%	
17-PRE			0%	0%	0%	
18-PRE			0%	0%	0%	
19-PRE			0%	0%	0%	
20-PRE			0%	0%	0%	
21-PRE			0%	0%	0%	
22-PRE			0%	0%	0%	
23-PRE			0%	0%	0%	
24-PRE			0%	0%	0%	
25-PRE			0%	0%	0%	

POST DEVELOPMENT		INPUT BMP DESCRIPTIONS		INPUT OVERALL REMOVAL EFFICIENCIES (%) FOR POLLUTANTS OF CONCERN		
Sub-Area			TSS	TP	TN	
1-POST		Infiltration Basin 1 (>= 75ft from surface water)	90%	65%	60%	
2-POST		Infiltration Basin 2 (>= 75ft from surface water)	90%	65%	60%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
0.00			0%	0%	0%	
12-POST			0%	0%	0%	
13-POST			0%	0%	0%	
14-POST			0%	0%	0%	
15-POST			0%	0%	0%	
16-POST			0%	0%	0%	
17-POST			0%	0%	0%	
18-POST			0%	0%	0%	
19-POST			0%	0%	0%	
20-POST			0%	0%	0%	
21-POST			0%	0%	0%	
22-POST			0%	0%	0%	
23-POST			0%	0%	0%	
24-POST			0%	0%	0%	
25-POST			0%	0%	0%	

TS#6 - NHDES Simple Method
OVERALL SUMMARY

12/15/2016

Date (MM/DD/YYYY): 11/22/2016
 Project Name: Northern Pass Transmission - Transition Site #6
 Town/City: Bridgewater (Nearest Town)
 Impacted Surface Waters: Pemigewasset River
 Applicant: Northern Pass Transmission, LLC.
 DES File #:

TOTAL PRE -DEVELOPMENT (PRE-DEV) AREA (ACRES) =	4.18
TOTAL PRE-DEV EFFECTIVE IMPERVIOUS AREA (ACRES) =	0.36
TOTAL PRE-DEV PERCENT EFFECTIVE IMPERVIOUS (%) =	8.6%
TOTAL POST DEVELOPMENT (POST-DEV) AREA (ACRES) =	4.19
TOTAL POST-DEV EFFECTIVE IMPERVIOUS AREA (ACRES) =	0.47
TOTAL POST-DEV PERCENT EFFECTIVE IMPERVIOUS (%) =	11.2%
TOTAL POST-DEV AREA THAT IS FERTILIZED ANNUALLY (ACRES) =	0.00
TOTAL POST-DEV PERCENT OF AREA THAT IS FERTILIZED ANNUALLY (%) =	0.0%

	TSS (LBS/YR)	TP (LBS/YR)	TN (LBS/YR)
PRE DEVELOPMENT LOADS (NO BMPS)	620.1	2.1	12.9
PRE DEVELOPMENT LOADS (WITH BMPS)	620.1	2.1	12.9
PRE DEVELOPMENT LOAD REDUCTION DUE TO BMPS	0.0	0.0	0.0
PROPOSED PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	NA	0.0%	0.0%
POST DEVELOPMENT LOADS (NO BMPS)	737.1	2.5	15.4
POST DEVELOPMENT LOADS (WITH BMPS)	73.7	0.9	6.1
POST DEVELOPMENT LOAD REDUCTION DUE TO BMPS	663.3	1.6	9.2
POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE)	-546.4	-1.2	-6.8
% DIFFERENCE FROM PRE DEVELOPMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-88.1%	-58.4%	-52.5%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	15.9%	15.9%	15.9%
CURRENTLY PROPOSED REMOVAL EFFICIENCY	90.0%	65.0%	60.0%
REMAINING REMOVAL EFFICIENCY NECESSARY TO MEET PRE-DEVELOPMENT LOAD	-74.1%	-49.1%	-44.1%

Date (MM/DD/YYYY): 11/22/2016
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 Impacted Surface Waters: Pemigewasset River
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 DES File #:

TOTAL POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE) (lbs/yr)	-546.4
% DIFFERENCE FROM PRE DEVELOPMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-88.1%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	15.9%
CURRENTLY PROPOSED REMOVAL EFFICIENCY	90.0%
REMAINING REMOVAL EFFICIENCY NECESSARY TO MEET PRE-DEVELOPMENT LOAD	-74.1%

PRE-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
PRE	1- PRE	Pre 1	4.18	0.36	NA	TSS	NA		620.1	620.1	0.0	0.0%
PRE	2-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	12-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	13-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	14-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	15-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	16-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	17-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	18-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	19-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	20-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	21-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	22-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	23-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	24-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
PRE	25-PRE		0.00	0.00	NA	TSS	NA		0.0	0.0	0.0	0.0%
		TOTAL	4.18	0.36				TOTAL	620.1	620.1	0.0	0.0%

Date (MM/DD/YYYY): 11/22/2016
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 Town/City: Bridgewater (Nearest Town)
 Impacted Surface Waters: Pemigewasset River
 Applicant: Northern Pass Transmission, LLC.
 DES File #:

TOTAL POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE) (lbs/yr)	-1.2
% DIFFERENCE FROM PRE DEVELOPMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-58.4%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	15.9%
CURRENTLY PROPOSED REMOVAL EFFICIENCY	65.0%
REMAINING REMOVAL EFFICIENCY NECESSARY TO MEET PRE-DEVELOPMENT LOAD	-49.1%

PRE-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
PRE	1-PRE	Pre 1	4.18	0.36	NA	TP	NA		2.1	2.1	0.0	0.0%
PRE	2-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	12-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	13-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	14-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	15-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	16-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	17-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	18-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	19-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	20-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	21-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	22-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	23-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	24-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
PRE	25-PRE		0.00	0.00	NA	TP	NA		0.0	0.0	0.0	0.0%
		TOTAL	4.18	0.36				TOTAL	2.1	2.1	0.0	0.0%

TS#6 - NHDES Simple Method
 TP SUB_AREA SUMMARY

12/15/2016

Date (MM/DD/YYYY): 11/22/2016
 Project Name: Northern Pass Transmission - Transition Site #6
 Town/City: Bridgewater (Nearest Town)
 Impacted Surface Waters: Pemigewasset River
 Applicant: Northern Pass Transmission, LLC.
 DES File #:

POST-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
POST	1-POST	Post 1	2.09	0.32	0.00	TP	0.0%	Infiltration Basin 1 (>= 75ft from surface water)	1.5	0.5	1.0	65.0%
POST	2-POST	Post 1	2.10	0.15	0.00	TP	0.0%	Infiltration Basin 2 (>= 75ft from surface water)	0.9	0.3	0.6	65.0%
POST	0.00		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	12-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	13-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	14-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	15-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	16-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	17-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	18-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	19-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	20-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	21-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	22-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	23-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	24-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
POST	25-POST		0.00	0.00	0.00	TP	0.0%		0.0	0.0	0.0	0.0%
TOTAL			4.19	0.47	0.00			TOTAL	2.5	0.9	1.6	65.0%

TS#6 - NHDES Simple Method
TN SUB_AREA SUMMARY

12/15/2016

Date (MM/DD/YYYY): 11/22/2016
 Project Name: Northern Pass Transmission - Transition Site #6
 Town/City: Bridgewater (Nearest Town)
 Impacted Surface Waters: Pemigewasset River
 Applicant: Northern Pass Transmission, LLC.
 DES File #:

TOTAL POST DEVELOPMENT - PRE DEVELOPMENT (SHOULD BE 0 OR NEGATIVE) (lbs/yr)	-6.8
% DIFFERENCE FROM PRE DEVELOPMENT LOADS (SHOULD BE 0 OR NEGATIVE)	-52.5%
TOTAL REMOVAL EFFICIENCY NEEDED TO MEET PRE-DEVELOPMENT LOAD	15.9%
CURRENTLY PROPOSED REMOVAL EFFICIENCY	60.0%
REMAINING REMOVAL EFFICIENCY NECESSARY TO MEET PRE-DEVELOPMENT LOAD	-44.1%

PRE-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
PRE	1-PRE	Pre 1	4.18	0.36	NA	TN	NA		12.9	12.9	0.0	0.0%
PRE	2-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	0.00		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	12-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	13-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	14-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	15-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	16-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	17-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	18-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	19-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	20-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	21-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	22-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	23-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	24-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
PRE	25-PRE		0.00	0.00	NA	TN	NA		0.0	0.0	0.0	0.0%
		TOTAL	4.18	0.36				TOTAL	12.9	12.9	0.0	0.0%

TS#6 - NHDES Simple Method
TN SUB_AREA SUMMARY

12/15/2016

Date (MM/DD/YYYY): 11/22/2016
 Project Name: Northern Pass Transmission - Transition Site #6
 Town/City: Bridgewater (Nearest Town)
 Impacted Surface Waters: Pemigewasset River
 Applicant: Northern Pass Transmission, LLC.
 DES File #:

POST-DEVELOPMENT

PRE OR POST - DEV	SUB-AREA	POINT OF ANALYSIS NUMBER	AREA (acres)	Effective Impervious Area (acres)	Area Fertilized Annually (acres)	POLLUTANT	PERCENT REDUCTION IN FERTILIZER APPLICATION RATE	BMPS	LOAD (NO BMPS) (lbs/yr)	LOAD (WITH BMPS) (lbs/yr)	LOAD REDUCTION DUE TO BMPS (lbs/yr)	PERCENT REMOVAL
POST	1-POST	Post 1	2.09	0.32	0.00	TN	0.0%	Infiltration Basin 1 (>= 75ft from surface water)	9.6	3.8	5.7	60.0%
POST	2-POST	Post 1	2.10	0.15	0.00	TN	0.0%	Infiltration Basin 2 (>= 75ft from surface water)	5.8	2.3	3.5	60.0%
POST	0.00		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	0.00		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	12-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	13-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	14-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	15-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	16-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	17-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	18-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	19-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	20-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	21-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	22-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	23-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	24-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
POST	25-POST		0.00	0.00	0.00	TN	0.0%		0.0	0.0	0.0	0.0%
TOTAL			4.19	0.47	0.00			TOTAL	15.4	6.1	9.2	60.0%