INSTRUCTINSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Subcatchment PR 1.2

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Proprietary Treatment Practice	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**

Total TSS Removal = **85%**

Project: **Residences at Ashland**
Prepared By: **KIC**
Date: **1/22/2026**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

CONTECH ENGINEERED SOLUTIONS

CASCADE separator™

CASCADE ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

THE RESIDENCES AT ASHLAND
ASHLAND, MA

Area	**0.12 ac**	Unit Site Designation	**WQU 1-1**
Weighted C	**0.90**		
t_c	**6 min**		
Cascade Model	**CS-4**	Cascade Treatment Capacity	**2.0 cfs**

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Treated Flowrate (cfs)	Hydraulic Loading Rate (gpm/ft2)	Incremental Removal (%)
0.02	10.2%	10.2%	0.00	0.08	10.2
0.04	9.6%	19.8%	0.00	0.15	9.6
0.06	9.4%	29.3%	0.01	0.23	9.4
0.08	7.7%	37.0%	0.01	0.31	7.7
0.10	8.6%	45.6%	0.01	0.39	8.6
0.12	6.3%	51.9%	0.01	0.46	6.3
0.14	4.7%	56.5%	0.02	0.54	4.7
0.16	4.6%	61.2%	0.02	0.62	4.6
0.18	3.5%	64.7%	0.02	0.69	3.5
0.20	4.3%	69.1%	0.02	0.77	4.3
0.25	8.0%	77.1%	0.03	0.96	8.0
0.30	5.6%	82.7%	0.03	1.16	5.6
0.35	4.4%	87.0%	0.04	1.35	4.4
0.40	2.5%	89.5%	0.04	1.54	2.5
0.45	2.5%	92.1%	0.05	1.74	2.5
0.50	1.4%	93.5%	0.05	1.93	1.4
0.75	5.0%	98.5%	0.08	2.89	5.0
1.00	1.0%	99.5%	0.11	3.86	1.0
1.50	0.0%	99.5%	0.16	5.79	0.0
2.00	0.0%	99.5%	0.22	7.71	0.0
3.00	0.5%	100.0%	0.32	11.57	0.5
					100.0
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.5%
				Predicted Net Annual Load Removal Efficiency =	**93.5%**

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA

2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

INSTRUCTINSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Subcatchment PR 1.3

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Proprietary Treatment Practice	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**

Total TSS Removal = **85%**

Project: **Residences at Ashland**
Prepared By: **KIC**
Date: **1/22/2026**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

CONTECH ENGINEERED SOLUTIONS

CASCADE separator™

CASCADE ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

THE RESIDENCES AT ASHLAND
ASHLAND, MA

Area	1.08 ac	Unit Site Designation	WQU 1-2
Weighted C	0.90		
t_c	6 min		
Cascade Model	CS-4	Cascade Treatment Capacity	**2.0 cfs**

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Treated Flowrate (cfs)	Hydraulic Loading Rate (gpm/ft2)	Incremental Removal (%)
0.02	10.2%	10.2%	0.02	0.70	10.2
0.04	9.6%	19.8%	0.04	1.39	9.6
0.06	9.4%	29.3%	0.06	2.09	9.4
0.08	7.7%	37.0%	0.08	2.78	7.7
0.10	8.6%	45.6%	0.10	3.48	8.6
0.12	6.3%	51.9%	0.12	4.17	6.3
0.14	4.7%	56.5%	0.14	4.87	4.7
0.16	4.6%	61.2%	0.16	5.56	4.6
0.18	3.5%	64.7%	0.18	6.26	3.5
0.20	4.3%	69.1%	0.19	6.96	4.3
0.25	8.0%	77.1%	0.24	8.70	8.0
0.30	5.6%	82.7%	0.29	10.43	5.6
0.35	4.4%	87.0%	0.34	12.17	4.4
0.40	2.5%	89.5%	0.39	13.91	2.5
0.45	2.5%	92.1%	0.44	15.65	2.5
0.50	1.4%	93.5%	0.49	17.39	1.3
0.75	5.0%	98.5%	0.73	26.09	4.4
1.00	1.0%	99.5%	0.97	34.78	0.8
1.50	0.0%	99.5%	1.46	52.17	0.0
2.00	0.0%	99.5%	1.95	69.56	0.0
3.00	0.5%	100.0%	2.13	76.08	0.1
					98.6
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.4%
				Predicted Net Annual Load Removal Efficiency =	**92.2%**

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA

2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

INSTRUCTINSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Subcatchment PR 2.2 (Pretreatment)

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Proprietary Treatment Practice	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**

Total TSS Removal = **85%**

Project: **Residences at Ashland**
Prepared By: **KIC**
Date: **1/22/2026**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTINSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Subcatchment PR 2.2

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Proprietary Treatment Practice	**0.80**	**0.75**	**0.60**	**0.15**
Infiltration Basin	**0.80**	**0.15**	**0.12**	**0.03**
	0.00	**0.03**	**0.00**	**0.03**
	0.00	**0.03**	**0.00**	**0.03**

Total TSS Removal = **97%**

Project: **Residences at Ashland**
Prepared By: **KIC**
Date: **1/22/2026**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

CONTECH ENGINEERED SOLUTIONS

CASCADE separator™

CASCADE ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

THE RESIDENCES AT ASHLAND
ASHLAND, MA

Area	2.06 ac	Unit Site Designation	WQU 2-1
Weighted C	0.90		
t_c	6 min		
Cascade Model	CS-5	Cascade Treatment Capacity	3.5 cfs

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Treated Flowrate (cfs)	Hydraulic Loading Rate (gpm/ft2)	Incremental Removal (%)
0.02	10.2%	10.2%	0.04	0.85	10.2
0.04	9.6%	19.8%	0.07	1.70	9.6
0.06	9.4%	29.3%	0.11	2.55	9.4
0.08	7.7%	37.0%	0.15	3.40	7.7
0.10	8.6%	45.6%	0.19	4.24	8.6
0.12	6.3%	51.9%	0.22	5.09	6.3
0.14	4.7%	56.5%	0.26	5.94	4.7
0.16	4.6%	61.2%	0.30	6.79	4.6
0.18	3.5%	64.7%	0.33	7.64	3.5
0.20	4.3%	69.1%	0.37	8.49	4.3
0.25	8.0%	77.1%	0.46	10.61	8.0
0.30	5.6%	82.7%	0.56	12.73	5.6
0.35	4.4%	87.0%	0.65	14.85	4.3
0.40	2.5%	89.5%	0.74	16.98	2.4
0.45	2.5%	92.1%	0.84	19.10	2.4
0.50	1.4%	93.5%	0.93	21.22	1.3
0.75	5.0%	98.5%	1.39	31.83	4.1
1.00	1.0%	99.5%	1.86	42.44	0.7
1.50	0.0%	99.5%	2.79	63.66	0.0
2.00	0.0%	99.5%	3.50	80.01	0.0
3.00	0.5%	100.0%	3.50	80.01	0.1
					98.0
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.4%
				Predicted Net Annual Load Removal Efficiency =	**91.5%**

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA

2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

CONTECH ENGINEERED SOLUTIONS

CASCADE separator™

CASCADE ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

THE RESIDENCES AT ASHLAND
ASHLAND, MA

Area	**0.27 ac**	Unit Site Designation	**WQU 2-2**
Weighted C	**0.90**		
t_c	**6 min**		
Cascade Model	**CS-3**	Cascade Treatment Capacity	**1.0 cfs**

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Treated Flowrate (cfs)	Hydraulic Loading Rate (gpm/ft2)	Incremental Removal (%)
0.02	10.2%	10.2%	0.00	0.31	10.2
0.04	9.6%	19.8%	0.01	0.62	9.6
0.06	9.4%	29.3%	0.01	0.93	9.4
0.08	7.7%	37.0%	0.02	1.24	7.7
0.10	8.6%	45.6%	0.02	1.55	8.6
0.12	6.3%	51.9%	0.03	1.86	6.3
0.14	4.7%	56.5%	0.03	2.17	4.7
0.16	4.6%	61.2%	0.04	2.48	4.6
0.18	3.5%	64.7%	0.04	2.79	3.5
0.20	4.3%	69.1%	0.05	3.10	4.3
0.25	8.0%	77.1%	0.06	3.87	8.0
0.30	5.6%	82.7%	0.07	4.65	5.6
0.35	4.4%	87.0%	0.09	5.42	4.4
0.40	2.5%	89.5%	0.10	6.19	2.5
0.45	2.5%	92.1%	0.11	6.97	2.5
0.50	1.4%	93.5%	0.12	7.74	1.4
0.75	5.0%	98.5%	0.18	11.62	5.0
1.00	1.0%	99.5%	0.24	15.49	1.0
1.50	0.0%	99.5%	0.37	23.23	0.0
2.00	0.0%	99.5%	0.49	30.97	0.0
3.00	0.5%	100.0%	0.73	46.46	0.3
					99.8
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.5%
				Predicted Net Annual Load Removal Efficiency =	**93.4%**

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA

2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.

INSTRUCTINSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Subcatchment PR 3.2 (Pretreatment)

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Proprietary Treatment Practice	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**

Total TSS Removal = **85%**

Project: **Residences at Ashland**
Prepared By: **KIC**
Date: **1/22/2026**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTINSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS: INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: Subcatchment PR 3.2

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Proprietary Treatment Practice	**0.80**	**0.75**	**0.60**	**0.15**
Infiltration Basin	**0.80**	**0.15**	**0.12**	**0.03**
	0.00	**0.03**	**0.00**	**0.03**
	0.00	**0.03**	**0.00**	**0.03**

Total TSS Removal = **97%**

Project: **Residences at Ashland**
Prepared By: **KIC**
Date: **1/22/2026**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

CONTECH ENGINEERED SOLUTIONS

CASCADE separator™

CASCADE ESTIMATED NET ANNUAL SOLIDS LOAD REDUCTION BASED ON THE RATIONAL RAINFALL METHOD

THE RESIDENCES AT ASHLAND
ASHLAND, MA

Area	1.51 ac	Unit Site Designation	WQU 3-1
Weighted C	0.90		
t_c	6 min		
Cascade Model	CS-4	Cascade Treatment Capacity	2.0 cfs

Rainfall Intensity[1] (in/hr)	Percent Rainfall Volume[1]	Cumulative Rainfall Volume	Treated Flowrate (cfs)	Hydraulic Loading Rate (gpm/ft2)	Incremental Removal (%)
0.02	10.2%	10.2%	0.03	0.97	10.2
0.04	9.6%	19.8%	0.05	1.94	9.6
0.06	9.4%	29.3%	0.08	2.91	9.4
0.08	7.7%	37.0%	0.11	3.88	7.7
0.10	8.6%	45.6%	0.14	4.85	8.6
0.12	6.3%	51.9%	0.16	5.82	6.3
0.14	4.7%	56.5%	0.19	6.79	4.7
0.16	4.6%	61.2%	0.22	7.76	4.6
0.18	3.5%	64.7%	0.24	8.73	3.5
0.20	4.3%	69.1%	0.27	9.70	4.3
0.25	8.0%	77.1%	0.34	12.13	8.0
0.30	5.6%	82.7%	0.41	14.55	5.5
0.35	4.4%	87.0%	0.48	16.98	4.2
0.40	2.5%	89.5%	0.54	19.40	2.4
0.45	2.5%	92.1%	0.61	21.83	2.3
0.50	1.4%	93.5%	0.68	24.25	1.2
0.75	5.0%	98.5%	1.02	36.38	3.9
1.00	1.0%	99.5%	1.36	48.51	0.7
1.50	0.0%	99.5%	2.04	72.76	0.0
2.00	0.0%	99.5%	2.13	76.08	0.0
3.00	0.5%	100.0%	2.13	76.08	0.1
					97.3
				Removal Efficiency Adjustment[2] =	6.5%
				Predicted % Annual Rainfall Treated =	93.3%
				Predicted Net Annual Load Removal Efficiency =	**90.9%**

1 - Based on 10 years of hourly precipitation data from NCDC Station 770, Boston WSFO AP, Suffolk County, MA

2 - Reduction due to use of 60-minute data for a site that has a time of concentration less than 30-minutes.