

Pre-Construction 2-yr Storm Event Drainage Runoff
Downtown Redevelopment
Town of Millbury, MA

Overland Runoff

Flows are divided between east and west at the centerline of South & North Main Streets. Parcel areas were calculated based on Town of Millbury GIS and tax data.

East (2-yr)

Sidewalks	0.0253	CFS
Roadway	0.0689	CFS
Parcels ¹	0.2366	CFS

Total Area **0.3308** **CFS**

West (2-yr)

Sidewalks	0.0216	CFS
Roadway	0.0456	CFS
Parcels ¹	0.1126	CFS

Total Area **0.1797** **CFS**

¹ Parcel data information was collected from the Town's GIS system and tax records. Data includes the building footprint as well as any pavement on the parcel. Flows are assumed to flow to the sidewalks and public road right of way.

Pre-Construction 2-yr Storm Event Drainage Runoff
Downtown Redevelopment
Town of Millbury, MA

Total Pre-Construction Flow

Total Q (2-yr) 0.5106 CFS

Post-Construction 2-yr Storm Event Drainage Runoff
Downtown Redevelopment
Town of Millbury, MA

Overland Runoff Totaled by Pervious Catchment

Flows are divided between east and west at the centerline of South & North Main Streets. Parcel areas were calculated based on Town of Millbury GIS and tax data.

East (2-yr)

Rain Garden 2

<i>Sidewalks</i>	<i>A</i>	<i>thru</i>	<i>E</i>
<i>Pavers</i>	<i>A</i>	<i>thru</i>	<i>E</i>
Parcels ¹ (91 & 89)		0.0517	CFS

Total Area **0.0560** **CFS**

Rain Garden 3

Parcels ¹ (207 roofline)		0.0149	SF
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Total Area **0.0149** **CFS**

Rain Garden 4

<i>Sidewalks</i>	<i>F</i>	<i>thru</i>	<i>I (.5)</i>
<i>Sidewalks</i>	<i>K</i>	<i>thru</i>	<i>L</i>
<i>Pavers</i>	<i>G</i>	<i>thru</i>	<i>O</i>
<i>Pavers</i>	<i>Q</i>	<i>thru</i>	<i>T</i>
Parcels ¹ (207 paving)		-	CFS

Total Area **0.0090** **CFS**

Rain Garden 5

<i>Sidewalks</i>	<i>I (.5)</i>		
<i>Sidewalks</i>	<i>J</i>	<i>thru</i>	<i>N</i>
<i>Pavers</i>	<i>P</i>		
<i>Pavers</i>	<i>U</i>		
Parcels ¹ (206)		0.0408	CFS

Total Area **0.0485** **CFS**

West (2-yr)

Rain Garden 1

<i>Sidewalks</i>	<i>A</i>	<i>thru</i>	<i>H</i>
<i>Pavers</i>	<i>A</i>	<i>thru</i>	<i>I</i>
<i>Roadway</i>	<i>A</i>	<i>thru</i>	<i>B</i>
Parcels ¹ (106, 129, 130)		0.0553	CFS

Total Area **0.0744** **CFS**

Pavers

<i>Sidewalks</i>	<i>I</i>	<i>thru</i>	<i>Q</i>
<i>Pavers</i>	<i>J</i>	<i>thru</i>	<i>U</i>
Parcels ¹ (131, 158, 159, 160, .)		0.0573	CFS

Total Area **0.0705** **CFS**

Post-Construction 2-yr Storm Event Drainage Runoff
Downtown Redevelopment
Town of Millbury, MA

Overland Runoff Totaled by Pervious Catchment

Flows are divided between east and west at the centerline of South & North Main Streets. Parcel areas were calculated based on Town of Millbury GIS and tax data.

Pavers

<i>Sidewalks</i>	<i>O</i>		
<i>Pavers</i>	<i>V</i>		
Parcels ¹		0	CFS

Total Area 0.0003 CFS

¹ Parcel data information was collected from the Town's GIS system and tax records. Data includes the building

Post-Construction 2-yr Storm Event Drainage Runoff
Downtown Redevelopment
Town of Millbury, MA

Overland Runoff Directed Towards Existing Catch Basins

Flows are divided between east and west at the centerline of South & North Main Streets. These totals are flows that could potentially be diverted from the existing storm drainage system.

East				West			
Sidewalks	P			Sidewalks	R		
Roadway	A	thru	G	Roadway	C	thru	I
<hr/>				<hr/>			
Total Area		0.0698	CFS	Total Area		0.0326	CFS

Post-Construction 2-yr Storm Event Drainage Runoff
Downtown Redevelopment
Town of Millbury, MA

Total Post-Construction Flow

Total Q (2-yr) 0.3760 CFS

Post-Construction 2-yr Storm Event Infiltration
Downtown Redevelopment
Town of Millbury, MA

Rain Garden Infiltration

Flows are divided between east and west at the centerline of South & North Main Streets. Due to the use of perforated pipe to convey flows through the pavers to rain gardens, any infiltration below the pavers on the east side was ignored in these calculations.

East (2-yr)

Rain Garden 2

Area	286	SF
Infiltration Rate	1.02	in/hr
Total Infiltration	0.0068	CFS
Flow to Rain Garden	0.0560	CFS

Total Overflow **0.0493** **CFS**

Rain Garden 3

Area	40	SF
Infiltration Rate	1.02	in/hr
Total Infiltration	0.0009	CFS
Garden 2 Overflow	0.0493	CFS
Flow to Rain Garden	0.0149	CFS

Total Overflow **0.0632** **CFS**

Rain Garden 4

Area	303	SF
Infiltration Rate	1.02	in/hr
Total Infiltration	0.0072	CFS
Garden 3 Overflow	0.0632	CFS
Flow to Rain Garden	0.0090	CFS

Total Overflow **0.0651** **CFS**

Rain Garden 5

Area	257	SF
Infiltration Rate	1.02	in/hr
Total Infiltration	0.0061	CFS
Garden 4 Overflow	0.0651	CFS
Flow to Rain Garden	0.0485	CFS

Total Overflow **0.1075** **CFS**

West (2-yr)

Rain Garden 1

Area	190	SF
Infiltration Rate	1.02	in/hr
Total Infiltration	0.0045	CFS
Flow to Rain Garden	0.0744	CFS

Total Overflow **0.0699** **CFS**

Pavers

Area	1268	SF
Infiltration Rate	1.02	in/hr
Total Infiltration	0.0299	CFS
Flow to Rain Garden	0.0187	CFS

Total Overflow **(0.0113)** **CFS**

Post-Construction 2-yr Storm Event Infiltration
Downtown Redevelopment
Town of Millbury, MA

Rain Garden Infiltration

Flows are divided between east and west at the centerline of South & North Main Streets. Due to the use of perforated pipe to convey flows through the pavers to rain gardens, any infiltration below the pavers on the east side was ignored

East (2-yr) StormTech

Total Volume	797.4	CF
Total Area	272.2	SF
Infiltration Rate	0.085	ft/hr
Total Infiltration	0.0064	CFS

Total Overflow	0.1010	CFS
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Pre- & Post-Construction 2-yr Storm Event Runoff
Downtown Redevelopment
Town of Millbury, MA

Comparison of Pre- and Post-Construction Flows

Pre-Construction Total Q (2-yr)	0.5106	CFS
Post-Construction Total Q (2-yr)	0.3760	CFS
Total Post-Construction Infiltration	0.0209	CFS
Total Difference between Pre- & Post-Construction	(0.1556)	CFS

This project will reduce overland runoff in the project area by 0.1556 cubic feet per second during a 2-year, 24-hour storm event.

Pre-Construction 10-yr Storm Event Drainage Runoff
Downtown Redevelopment
Town of Millbury, MA

Overland Runoff

Flows are divided between east and west at the centerline of South & North Main Streets. Parcel areas were calculated based on Town of Millbury GIS and tax data.

East (10-yr)

Sidewalks	0.0376	CFS
Roadway	0.1021	CFS
Parcels ¹	0.3505	CFS

Total Area **0.4901** **CFS**

West (10-yr)

Sidewalks	0.0320	CFS
Roadway	0.0675	CFS
Parcels ¹	0.1668	CFS

Total Area **0.2663** **CFS**

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Pre-Construction 10-yr Storm Event Drainage Runoff
Downtown Redevelopment

Total Pre-Construction Flow

Total Q (10-yr) 0.7564 CFS

Post-Construction 10-yr Storm Event Drainage Runoff
Downtown Redevelopment
Town of Millbury, MA

Overland Runoff Totaled by Pervious Catchment

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East (10-yr)

Rain Garden 2

<i>Sidewalks</i>	<i>A</i>	<i>thru</i>	<i>E</i>
<i>Pavers</i>	<i>A</i>	<i>thru</i>	<i>E</i>
Parcels ¹ (91 & 89)		0.0765	CFS

Total Area **0.0830** **CFS**

Rain Garden 3

Parcels ¹ (207 roofline)		0.0220	SF
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Total Area **0.0220** **CFS**

Rain Garden 4

<i>Sidewalks</i>	<i>F</i>	<i>thru</i>	<i>I (.5)</i>
<i>Sidewalks</i>	<i>K</i>	<i>thru</i>	<i>L</i>
<i>Pavers</i>	<i>G</i>	<i>thru</i>	<i>O</i>
<i>Pavers</i>	<i>Q</i>	<i>thru</i>	<i>T</i>
Parcels ¹ (207 paving)		-	CFS

Total Area **0.0134** **CFS**

Rain Garden 5

<i>Sidewalks</i>	<i>I (.5)</i>		
<i>Sidewalks</i>	<i>J</i>	<i>thru</i>	<i>N</i>
<i>Pavers</i>	<i>P</i>		
<i>Pavers</i>	<i>U</i>		
Parcels ¹ (206)		0.0604	CFS

Total Area **0.0718** **CFS**

West (10-yr)

Rain Garden 1

<i>Sidewalks</i>	<i>A</i>	<i>thru</i>	<i>H</i>
<i>Pavers</i>	<i>A</i>	<i>thru</i>	<i>I</i>
<i>Roadway</i>	<i>A</i>	<i>thru</i>	<i>B</i>
Parcels ¹ (106, 129, 130)		0.0819	CFS

Total Area **0.1102** **CFS**

Pavers

<i>Sidewalks</i>	<i>I</i>	<i>thru</i>	<i>Q</i>
<i>Pavers</i>	<i>J</i>	<i>thru</i>	<i>U</i>
Parcels ¹ (131, 158, 159, 160, .)		0.0849	CFS

Total Area **0.1044** **CFS**

Post-Construction 10-yr Storm Event Drainage Runoff
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Overland Runoff Totaled by Pervious Catchment

Flows are divided between east and west at the centerline of South & North Main Streets. Parcel areas were calculated based on Town of Millbury GIS and tax data.

Pavers

Sidewalks	O		
Pavers	V		
Parcels ¹		0	CFS

Total Area **0.0005** **CFS**

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Post-Construction 10- yr Storm Event Drainage Runoff
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Overland Runoff Directed Towards Existing Catch Basins

Flows are divided between east and west at the centerline of South & North Main Streets. These totals are flows that could potentially be diverted from the existing storm drainage system.

East (10-yr)

Sidewalks	<i>P</i>		
Roadway	<i>A</i>	<i>thru</i>	<i>G</i>

Total Area	0.1034	CFS
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West (10-yr)

Sidewalks	<i>R</i>		
Roadway	<i>C</i>	<i>thru</i>	<i>I</i>

Total Area	0.0483	CFS
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Post-Construction 10-yr Storm Event Drainage Runoff
Downtown Redevelopment
Town of Millbury, MA

Total Pre-Construction Flow

Total Q (10-yr) 0.5570 CFS

**Post-Construction 10-yr Storm Event Infiltration
Downtown Redevelopment
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Rain Garden Infiltration

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East (10-yr)

Rain Garden 2

Area	286	SF
Infiltration Rate	1.02	in/hr
Total Infiltration	0.0068	CFS
Flow to Rain Garden	0.0830	CFS

Total Overflow **0.0762 CFS**

Rain Garden 3

Area	40	SF
Infiltration Rate	1.02	in/hr
Total Infiltration	0.0009	CFS
Garden 2 Overflow	0.0762	CFS
Flow to Rain Garden	0.0220	CFS

Total Overflow **0.0973 CFS**

Rain Garden 4

Area	303	SF
Infiltration Rate	1.02	in/hr
Total Infiltration	0.0072	CFS
Garden 3 Overflow	0.0973	CFS
Flow to Rain Garden	0.0134	CFS

Total Overflow **0.1036 CFS**

Rain Garden 5

Area	257	SF
Infiltration Rate	1.02	in/hr
Total Infiltration	0.0061	CFS
Garden 4 Overflow	0.1036	CFS
Flow to Rain Garden	0.0718	CFS

Total Overflow **0.1693 CFS**

West (10-yr)

Rain Garden 1

Area	190	SF
Infiltration Rate	1.02	in/hr
Total Infiltration	0.0045	CFS
Flow to Rain Garden	0.1102	CFS

Total Overflow **0.1057 CFS**

Pavers

Area	1268	SF
Infiltration Rate	1.02	in/hr
Total Infiltration	0.0299	CFS
Flow to Rain Garden	0.0187	CFS

Total Overflow **(0.0113) CFS**

Post-Construction 10-yr Storm Event Infiltration
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Rain Garden Infiltration

Flows are divided between east and west at the centerline of South & North Main Streets. Due to the use of perforated pipe to convey flows through the pavers to rain gardens, any infiltration below the pavers on the east side was ignored

East (10-yr)

StormTech

Total Volume	797.4	CF
Total Area	272.2	SF
Infiltration Rate	0.085	ft/hr
Total Infiltration Rate	0.0064	CFS

Pre- & Post-Construction 10-yr Storm Event Runoff
Downtown Redevelopment
Town of Millbury, MA

Pre- & Post-Construction Comparison of Flow

Pre-Construction Total Q (10-yr)	0.7564	CFS
Post-Construction Total Q (10-yr)	0.5570	CFS
Total Post-Construction Infiltration	0.0209	CFS
Total Difference between Pre- & Post-Construction	(0.2204)	CFS

This project will reduce overland runoff in the project area by 0.2204 cubic feet per second during a 10-year, 24-hour storm event.