

GUI Layout

MIDS Calculator

MIDS workgroup meeting
3/15/2013

GUI Layout

Site Information

Schematic

Results

Help

Summary Information:

Impervious area not routed to a BMP

acres

Pervious area not routed to a BMP

acres

Performance goal requirement

ft³

Performance goal reduction achieved

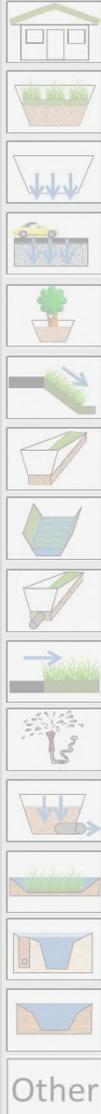
ft³

Percent TP reduction achieved

%

Percent TSS reduction achieved

%



Project Name:

User Name/Company Name:

Date:

Project Description:

Volume Retention Requirement (inches)

1.1

Site's Zip Code

55414

Annual Rainfall (inches)

31.6

Phosphorus EMC (mg/l)

0.30

TSS EMC (mg/l)

54.50

Other

Summary Information:

Impervious area not routed to a BMP

acres

Pervious area not routed to a BMP

acres

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ft³

Performance goal reduction achieved

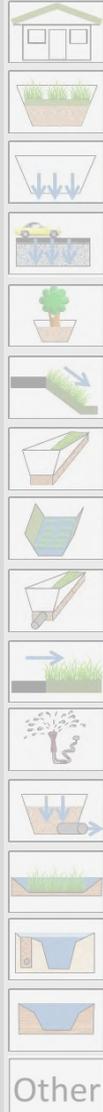
ft³

Percent TP reduction achieved

%

Percent TSS reduction achieved

%



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Volume Retention Requirement (inches)

1.1

Site's Zip Code

55414

Annual Rainfall (inches)

31.6

Phosphorus EMC (mg/l)

0.30

TSS EMC (mg/l)

54.50

Total Watershed Area

| Land Cover (acres) | A soils | B Soils | C Soils | D Soils | Totals (acres) |
|--|---------|---------|---------|---------|----------------|
| Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land | | | | | 0.00 |
| Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed | 0.20 | 5.00 | | | 5.20 |
| Impervious Cover (acres) | | | | | 5.00 |
| Total: | | | | | 10.20 |

Scroll Down





Summary Information:

Impervious area not routed to a BMP

acres

Pervious area not routed to a BMP

acres

Performance goal requirement

ft³

Performance goal reduction achieved

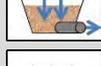
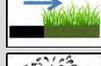
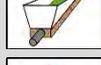
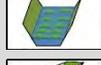
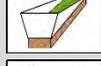
ft³

Percent TP reduction achieved

%

Percent TSS reduction achieved

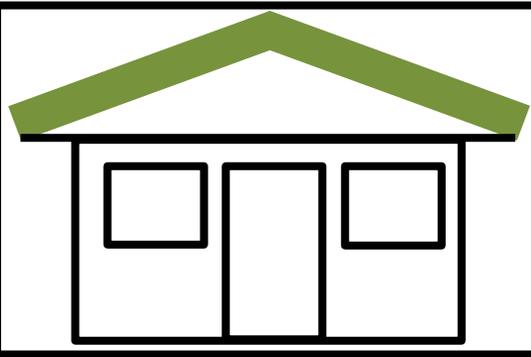
%



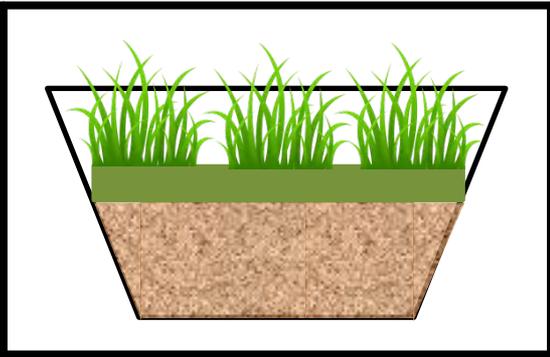
Other



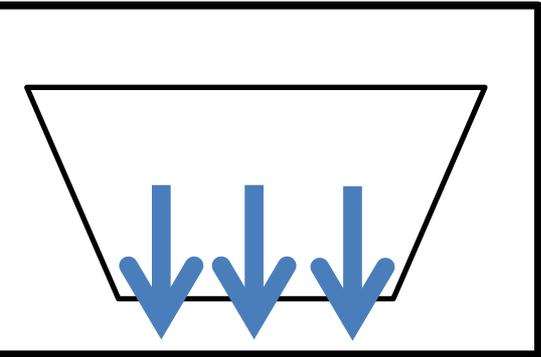
Icons for each BMP



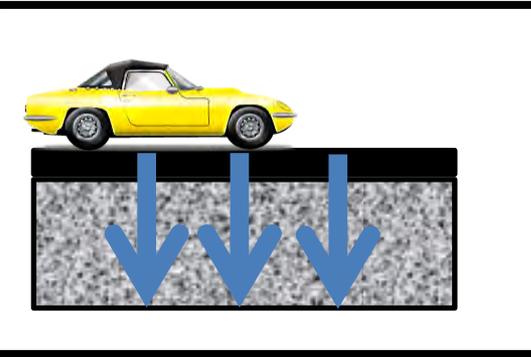
Green Roof



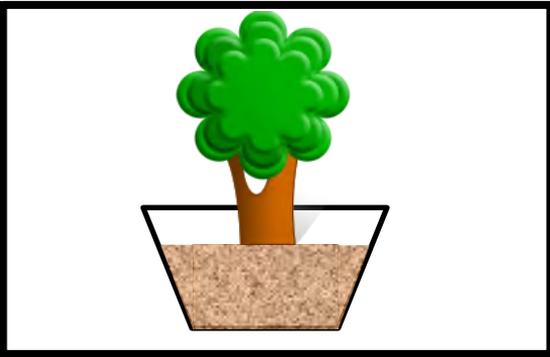
Bioretention Basin



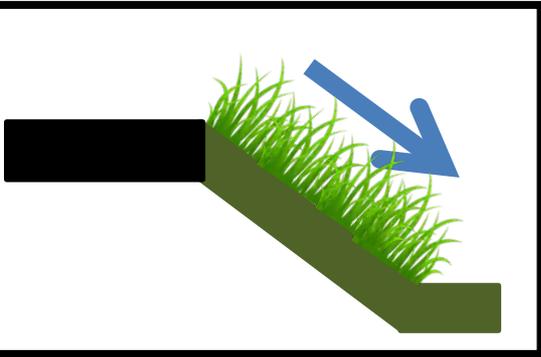
Infiltration Basin



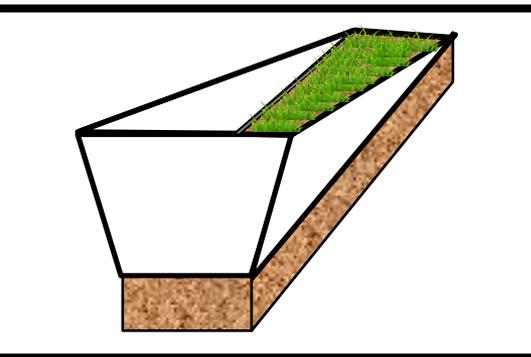
Permeable Pavement



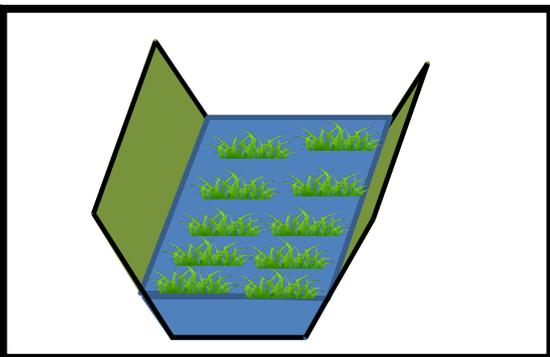
Infiltration Trench/Tree Box



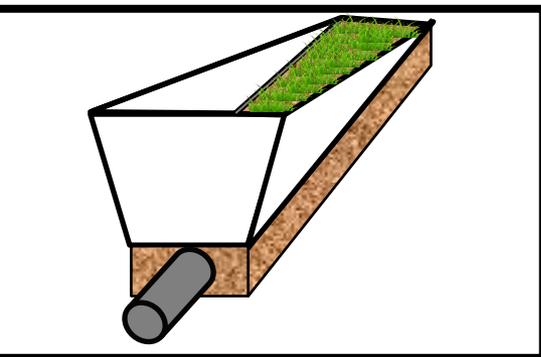
Swale Side Slope



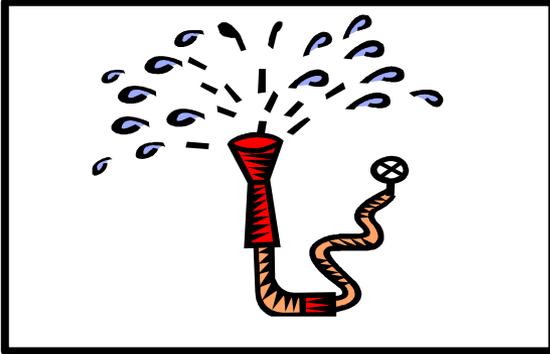
Swale Main Channel



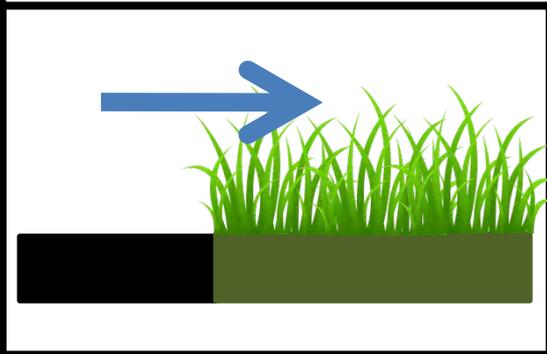
Wet Swale



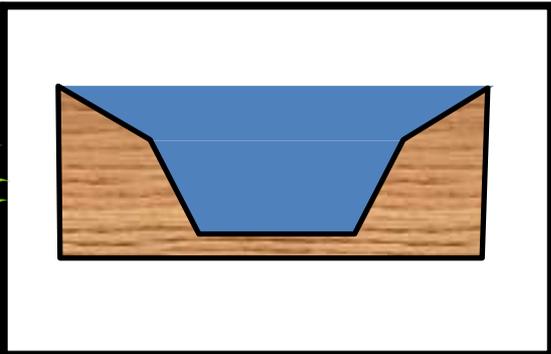
Swale With Underdrain



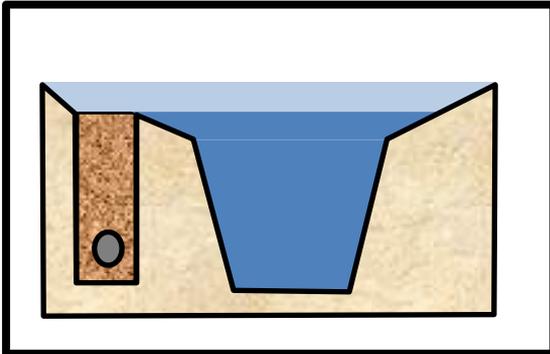
Harvest and Reuse



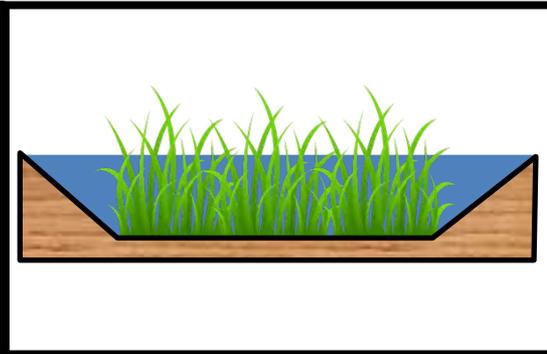
Filter Strip



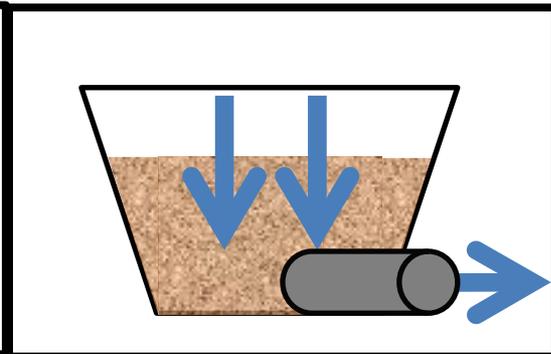
Stormwater Pond



Stormwater Pond w/ Filter Bench



Wetland



Sand Filter

Other

Other



Summary Information:

Impervious area not routed to a BMP

5.00 acres

Pervious area not routed to a BMP

5.20 acres

Performance goal requirement

19,965 ft³

Performance goal reduction achieved

0 ft³

Percent TP reduction achieved

0 %

Percent TSS reduction achieved

0 %



Green Roof

Hover over BMP icon



Other



Site Information

Schematic

Results

Summary Information:

Impervious area not routed to a BMP

0 acres

Pervious area not routed to a BMP

0 acres

Performance goal requirement

19,965 ft³

Performance goal reduction achieved

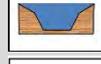
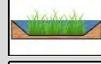
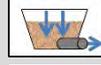
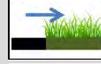
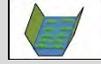
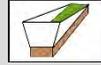
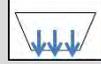
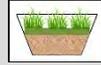
19,965 ft³

Percent TP reduction achieved

98.4 %

Percent TSS reduction achieved

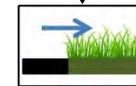
99.0 %



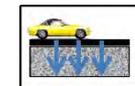
Other



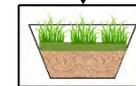
Green Roof - 1



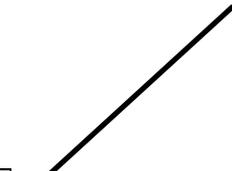
Filter Strip - 1



Permeable Pavement - 1



Bioretention - 1





Summary Information:

Impervious area not routed to a BMP

0 acres

Pervious area not routed to a BMP

0 acres

Performance goal requirement

19,965 ft³

Performance goal reduction

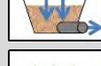
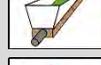
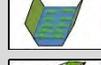
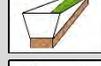
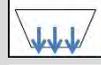
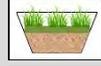
19,965 reduced ft³

Percent TP reduction achieved

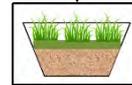
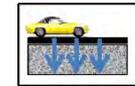
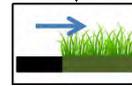
98.4 %

Percent TSS reduction achieved

99.0 %



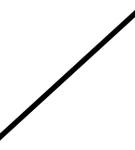
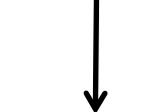
Other



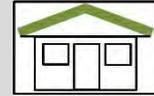
Edit Properties
 Link to Stormwater Manual Routing

Right Click on icon

Filter Strip - 1
 Bioretention - 1
 Permeable Pave..



BMP Properties: Green Roof - 1



Watershed | BMP Parameters | BMP Summary

BMP Name

BMP Watershed Area

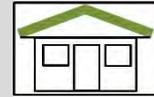
| Land Cover (acres) | A soils | B Soils | C Soils | D Soils | Totals (acres) |
|--|---------|---------|---------|---------|----------------|
| Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land | | | | | 0.00 |
| Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed | | | | | 0.00 |
| Impervious Cover (acres) | | | | | 1.00 |
| Total: | | | | | 1.00 |

OK

Cancel

Help

BMP Properties: Green Roof - 1



Watershed **BMP Parameters** BMP Summary

$$V = A_S * D_M * n$$

Top surface area (A_S)



| | |
|---|------------------|
| Required treatment volume (RV) [ft ³] | 3,993 |
| Media depth (D_M) [ft] | 1.0 |
| Top surface area (A_S) [ft ²] | 20,000 |
| Media porosity (n) [ft ³ /ft ³] (Typical Values 0.25-0.50) | 0.4 |
| BMP volume capacity(V) [ft ³] | 2,000 |
| BMP performance goal volume reduction (BMPV) [ft ³] | 2,000 |
| Routing/Downstream BMP | Filter Strip - 1 |

OK

Cancel

Help

BMP Properties: Green Roof - 1



Watershed BMP Parameters **BMP Summary**

Performance Goal Summary

| | |
|-------------------------------------|-----------------------|
| Water volume from direct watershed: | 3,993 ft ³ |
| Water volume from upstream BMPs: | 0 ft ³ |
| Total water volume routed to BMP: | 3,993 ft ³ |
| Retention volume provided by BMP: | 2,000 ft ³ |
| Outflow volume: | 1,993 ft ³ |

Annual Pollutant Loads Summary

| | |
|---|----------|
| Annual runoff volume retained: | 45 % |
| | |
| Particulate P load from direct watershed: | 1.01 lbs |
| Particulate P load from upstream BMPs: | 0 lbs |
| Particulate P load reduction: | 1.01 lbs |
| Particulate P load outflow: | 0 lbs |
| | |
| Dissolved P load from watershed: | 0.83 lbs |
| Dissolved P load from upstream BMPs: | 0 lbs |
| Dissolved P load reduction: | 0.37 lbs |
| Dissolved P load outflow: | 0.45 lbs |
| | |
| TSS load from watershed: | 333 lbs |
| TSS load from upstream BMPs: | 0 lbs |
| TSS load reduction: | 315 lbs |
| TSS load outflow: | 18 lbs |

OK

Cancel

Help



Summary Information:

Impervious area not routed to a BMP

0 acres

Pervious area not routed to a BMP

0 acres

Performance goal requirement

19,965 ft³

Performance goal reduction achieved

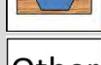
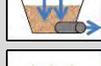
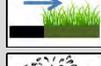
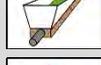
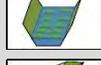
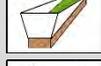
19,965 ft³

Percent TP reduction achieved

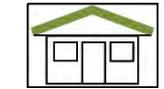
98.4 %

Percent TSS reduction achieved

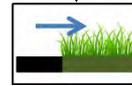
99.0 %



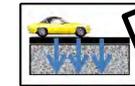
Other



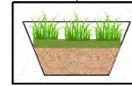
Green Roof - 1



Filter Strip - 1

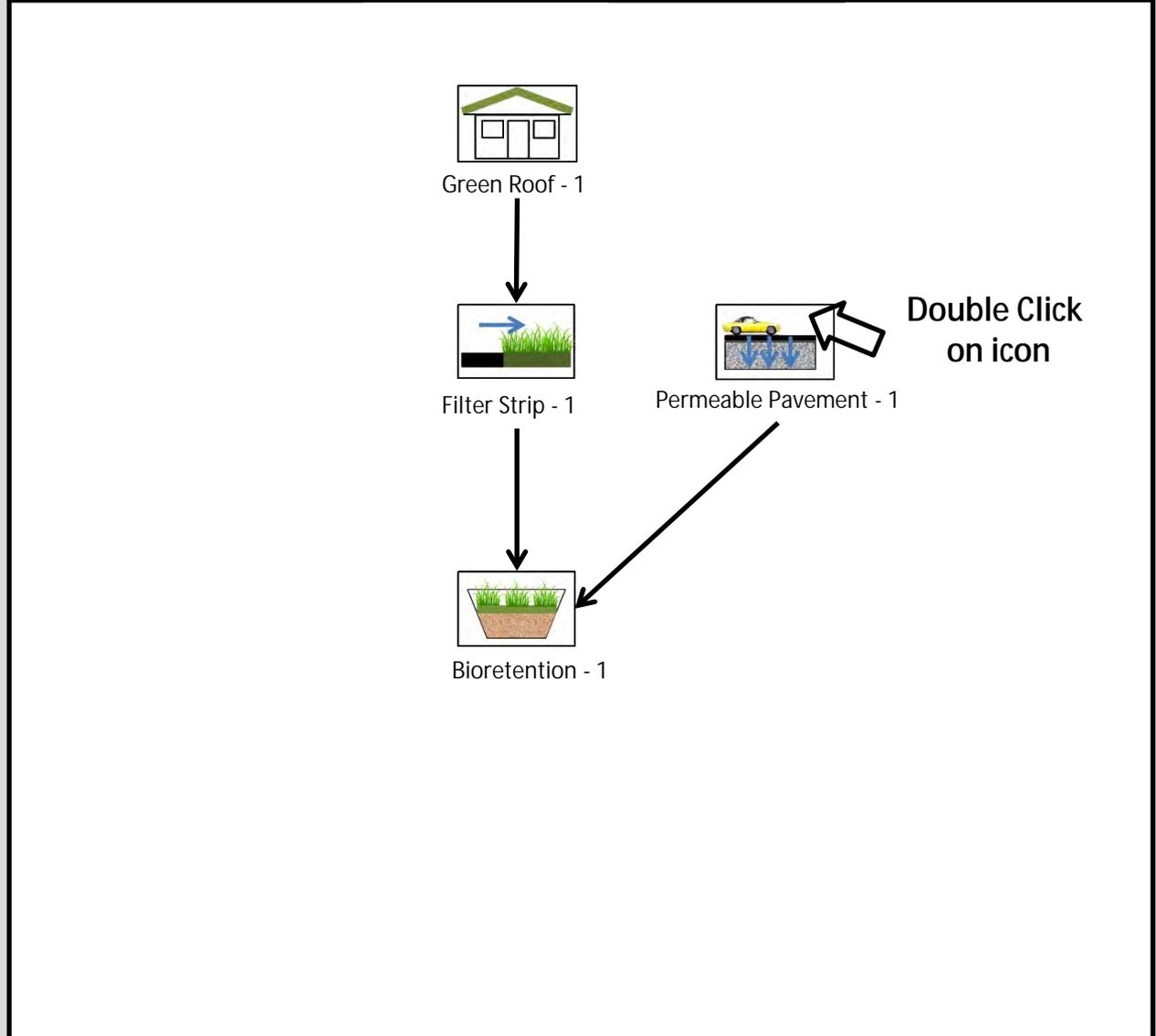


Permeable Pavement - 1



Bioretention - 1

Double Click on icon



BMP Properties: Permeable Pavement - 1



Watershed | BMP Parameters | BMP Summary

BMP Name

BMP Watershed Area

| Land Cover (acres) | A soils | B Soils | C Soils | D Soils | Totals (acres) |
|--|---------|---------|---------|---------|----------------|
| Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land | 0.20 | | | | 0.20 |
| Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed | | | | | 0.00 |
| Impervious Cover (acres) | | | | | 2.00 |
| Total: | | | | | 2.20 |

OK

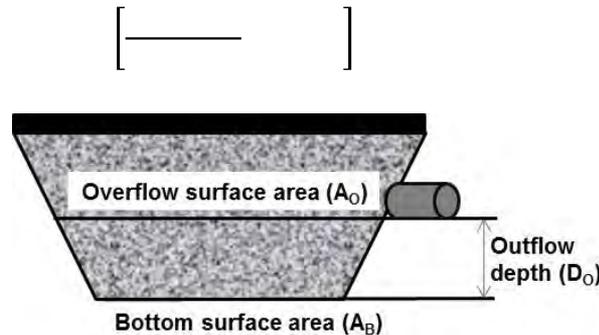
Cancel

Help

BMP Properties: Permeable Pavement - 1



Watershed **BMP Parameters** BMP Summary



Notes
 Permeable pavement must meet infiltration requirements for 48 hour drawdown under normal condition or 24 hour drawdown in special areas (i.e. near trout streams) according the Minnesota Construction General Permit. If requirements are not met, a warning message will appear. If outflow drain tile does not exist set outflow depth equal to total depth

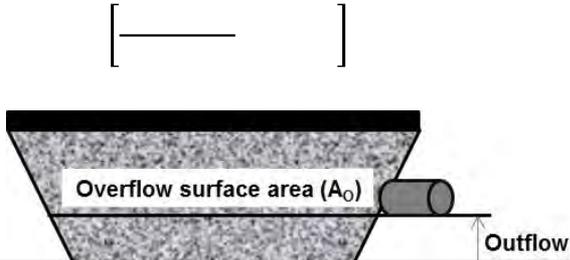
| | |
|---|---------------------------|
| Required treatment volume (RV) [ft ³] | 7,986 |
| Top surface area (A _s) [ft ²] | 43,560 |
| Bottom surface area (A _b) [ft ²] | 43,560 |
| Overflow depth (D _o) [ft] | 0.3 |
| Media porosity (n) [ft ³ /ft ³] (Typical Values 0.25-0.50) | 0.3 |
| Underlying subsoil – HSG (MN Stormwater Manual) | 6 SM (HSG B, 0.6 in/hr) ▾ |
| Will subsoil require compaction [yes/no] | NO ▾ |
| Required drawdown time (T _D) [hrs] | 48 ▾ |
| BMP volume capacity (V) [ft ³] | 3,920 |
| BMP performance goal volume reduction (BMPV) [ft ³] | 3,920 |
| Routing/Downstream BMP | Bioretention - 1 ▾ |

OK Cancel Help

BMP Properties: Permeable Pavement - 1



Watershed **BMP Parameters** BMP Summary



Notes

Permeable pavement must meet infiltration requirements for 48 hour drawdown under normal condition or 24 hour drawdown in special areas (i.e. near trout streams) according to the Minnesota Construction General Permit. If requirements are not met, a warning message will appear. If outflow drain tile does not exist set outflow depth

Error [X]

Drawdown time of 120 hrs does not meet drawdown time requirement. A depth of 0.1 ft should be used instead for D_0 . Please adjust your design.

OK

Required drawdown time (T_D) [hrs]

48

Volume reduction capacity of BMP (V) [ft³]

Volume of retention provided by BMP (BMPV) [ft³]

Routing/Downstream BMP

Bioretention - 1

OK

Cancel

Help

BMP Properties: Permeable Pavement - 1

Watershed BMP Parameters **BMP Summary****Performance Goal Summary**

| | |
|-------------------------------------|-----------------------|
| Water volume from direct watershed: | 7,986 ft ³ |
| Water volume from upstream BMPs: | 0 ft ³ |
| Total water volume routed to BMP: | 7,986 ft ³ |
| Retention volume provided by BMP: | 3,929 ft ³ |
| Outflow volume: | 4,066 ft ³ |

Annual Pollutant Loads Summary

| | |
|---|----------|
| Annual runoff volume retained: | 76 % |
| Particulate P load from direct watershed: | 2.05 lbs |
| Particulate P load from upstream BMPs: | 0 lbs |
| Particulate P load reduction: | 1.96 lbs |
| Particulate P load outflow: | 0.09 lbs |
| Dissolved P load from watershed: | 1.68 lbs |
| Dissolved P load from upstream BMPs: | 0 lbs |
| Dissolved P load reduction: | 1.28 lbs |
| Dissolved P load outflow: | 0.39 lbs |
| TSS load from watershed: | 677 lbs |
| TSS load from upstream BMPs: | 0 lbs |
| TSS load reduction: | 636 lbs |
| TSS load outflow: | 41 lbs |

OK

Cancel

Help



Site Information

Schematic

Results

Summary Information:

Impervious area not routed to a BMP

0 acres

Pervious area not routed to a BMP

0 acres

Performance goal requirement

19,965 ft³

Performance goal reduction achieved

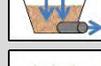
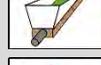
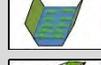
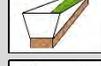
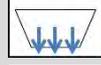
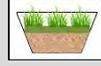
19,965 ft³

Percent TP reduction achieved

98.4 %

Percent TSS reduction achieved

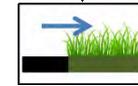
99.0 %



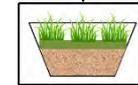
Other



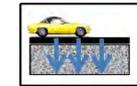
Green Roof - 1



Filter Strip - 1



Bioretention - 1



Permeable Pavement - 1



Site Information

Schematic

Results



Site Information

| | |
|-------------------------------|-------------|
| Volume retention requirement: | 1.1 inches |
| Site's zip code: | 55414 |
| Annual rainfall: | 31.6 inches |
| Phosphorus EMC: | 0.30 mg/l |
| TSS EMC: | 54.50 mg/l |

Total Watershed Areas

| Land Cover (acres) | A soils | B Soils | C Soils | D Soils | Totals (acres) |
|--|---------|---------|---------|---------|----------------|
| Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land | | | | | 0.00 |
| Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed | 0.20 | 5.00 | | | 5.20 |
| Impervious Cover (acres) | | | | | 5.00 |
| Total: | | | | | 10.20 |

Watershed Areas Routed to a BMP

| Land Cover (acres) | A soils | B Soils | C Soils | D Soils | Totals (acres) |
|--|---------|---------|---------|---------|----------------|
| Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested land | | | | | 0.00 |
| Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed | 0.20 | 5.00 | | | 5.20 |
| Impervious Cover (acres) | | | | | 5.00 |
| Total: | | | | | 10.20 |

Summary Information:

Impervious area not routed to a BMP

acres

Pervious area not routed to a BMP

acres

Performance goal requirement

ft³

Performance goal reduction achieved

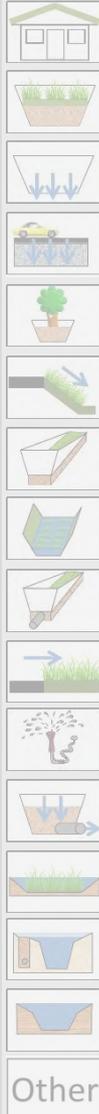
ft³

Percent TP reduction achieved

%

Percent TSS reduction achieved

%



Summary Information:

Impervious area not routed to a BMP

acres

Pervious area not routed to a BMP

acres

Performance goal requirement

ft³

Performance goal reduction achieved

ft³

Percent TP reduction achieved

%

Percent TSS reduction achieved

%



Other

Summary Information

Performance Goal Requirement:

| | |
|--|------------------------|
| Performance goal volume retention requirement: | 19,965 ft ³ |
| Volume removed by BMPs: | 19,965 ft ³ |
| Percent volume removed: | 100 % |

Annual Pollutant Load Reduction:

| | |
|---|-----------|
| Post development annual particulate P load: | 6.14 lbs |
| Annual particulate P removed by BMPs: | 6.05 lbs |
| Post development annual dissolved P load: | 5.02 lbs |
| Annual dissolved P removed by BMPs: | 4.93 lbs |
| Percent annual total phosphorus removed: | 98.4 % |
| Post development annual TSS load: | 2,027 lbs |
| Annual TSS removed by BMPs: | 2,007 lbs |
| Percent annual TSS removed: | 99.0 % |

Scroll Down



Summary Information:

Impervious area not routed to a BMP

acres

Pervious area not routed to a BMP

acres

Performance goal requirement

ft³

Performance goal reduction achieved

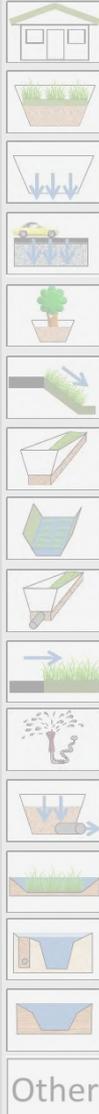
ft³

Percent TP reduction achieved

%

Percent TSS reduction achieved

%



Site Information

Schematic

Results

BMP Summary

| | BMP Volume Capacity (ft ³) | Performance Goal Volume Reduction (ft ³) | Annual Particulate P (lbs) | Annual Dissolved P (lbs) | Annual TSS (lbs) |
|--|--|--|----------------------------|--------------------------|------------------|
| Post development site totals | | 19,965 | 6.14 | 5.02 | 2027 |
| Reductions provided by individual BMPs | | | | | |
| Green roof - 1 | 2000 | 2000 | 1.01 | 0.37 | 315 |
| Filter strip - 1 | 599 | 599 | 0.14 | 0.16 | 350 |
| Bioretention basin - 1 | 16,000 | 13,446 | 2.94 | 3.12 | 706 |
| Permeable pavement - 1 | 3,920 | 3,920 | 1.96 | 1.28 | 636 |
| Total reductions | | 19,965 | 6.05 | 5.02 | 2007 |

Scroll Down

Comments from 3/11/2013 Calculator Tech Team meeting

- Add ability to adjust 1.1 inch PG, TSS EMC, and TP EMC. Add warning message and highlight in Result printout that values were changed (i.e., red box around changed value with note highlighting the default value).
- Add ability to select routing by right click on icon in Schematic tab (Added to slide 11)

Comments from 3/11/2013 Calculator Tech Team meeting

- For BMPs that require pretreatment:
 - Add a question to BMP Parameters Tab – Is pretreatment provided for this BMP? [yes/no]
 - Allow user to provide a comment explaining what pretreatment they provided or why they did not provide pretreatment
 - Highlight BMPs that do not have pretreatment in schematic page (i.e., red box around icon)
 - Will not change any calculations in the calculator. Only for informational/regulatory purposes.

Comments from 3/11/2013 Calculator Tech Team meeting

- Set limit to 20 for any single type of BMP. This allows for users to use both the GUI interface and the Excel Spreadsheet interchangeably.
- Add BMP Volume capacity to Results -> BMP Summary Table (Added to slide 23)
- Add a tool that would provide a quick workflow (through copy and paste from an Excel spreadsheet) to enter watershed information for all BMPs. (See next slide)



BMP Watershed Tool

| BMP | A Soils (acres) | | B Soils (acres) | | C Soils (acres) | | D Soils (acres) | | Impervious Area (acres) |
|------------------------|-----------------|-----------------------|-----------------|-----------------------|-----------------|-----------------------|-----------------|-----------------------|-------------------------|
| | Turf | Forest and Open Space | |
| Green roof – 1 | | | | | | | | | |
| Filter strip – 1 | | | | | | | | | |
| Bioretention basin – 1 | | | | | | | | | |
| Permeable pavement - 1 | | | | | | | | | |

OK

Cancel

Help