

Ranking Spreadsheet

Field	Explanation	Scoring Criteria	Score
BMP ID	This is an assigned ID code unique to each project.		
Latitude	This field contains the approximate latitude of the project.		
Longitude	This field contains the approximate longitude of the project.		
Project Name	This field contains the name of the project.		
Proposed BMP Practice Type	This field describes the proposed practice type.		
Describe Proposed BMP Practice(s)	A description of the proposed BMP(s).		
Known Project Constraints	Describe any known constraints for the proposed project.		
Hydrologic Soil Group	Mapped NRCS hydrologic soil group where the proposed BMP is located.		
Stormwater Permit(s)	Permit number for any expired or current permit(s) at this site.		
Act 250 Permits	Permit number for Act 250 permit(s) at this site.		
Hydrologic Connectivity	Degree to which the location of the proposed BMP is hydrologically connected to adjacent surface waters e.g. Connected, Semi-Connected, Not Connected		
Drainage Area (acres)	The drainage area of the BMP in acres.		
TP Yield (kg/yr)	TP generated by the drainage area for the BMP proposed without any controls.		
TP Reduction (kg/yr)	The amount of total phosphorus removed by the practice		
TP Reduction (lbs/yr)	The amount of total phosphorus removed by the practice		
TP Reduction (%)	The amount of total phosphorus removed by the practice expressed as a percent of the total TP yield of the area. This field is meant to be informative and is not scored in the ranking.		
TP Reduction (score)	1-4 (natural groupings within the range of sediment reductions for proposed projects for a specific plan. 1=very low p reduction, 4=very high P reduction)	< 0.5 lbs 0.5 - < 2 lbs 2 - < 4 lbs ≥ 4 lbs	1 2 3 4
Impervious Area Managed (acres)	The impervious area managed by the BMP in acres.		
Impervious Area Managed (Score)	1-4 (natural groupings within the range of impervious surface managed for proposed projects for a specific plan. More impervious treated gets more points)	< 0.5 acres 0.5 - < 2 acres 2 - < 4 acres ≥ 4 acres	1 2 3 4
Percent Impervious	The amount of the drainage area that is classified as impervious (%).		
Pervious Area Managed (acres)	The impervious area managed by the BMP in acres.		
BMP Storage Volume (ft3)	The volume infiltrated indicates the amount of stormwater runoff that is infiltrated into the groundwater to provide baseflow for the stream.		
Percent of Recharge criteria met	0-3 (0 = no infiltration, 1= infiltrates less than recharge volume, 2= meets full recharge, 3= exceeds recharge 1.5 times or more) Do not apply to road projects.	no infiltration infiltrates less than recharge volume meets full recharge exceeds recharge 1.5 times or more	0 1 2 3
Streambank or other gully erosion mitigation	0-2 (calculate volume= Length x avg. width x avg. depth, use natural groupings to divide volume into 3 categories)	None Minimal Major	0 1 2
Green infrastructure opportunity	0-1 (0=no, 1=yes)	no yes	0 1
Total Water Quality Score	Out of 21 (or 15 if road project)		21 (15)
Land Owner Description	Land owners are described for the area where BMPs are proposed to inform the land availability field. This field was not used in the ranking.		
Public land or Private Landowner support	0-3 (3=public land, 2=willing private land owner, 0=unwilling or unknown willingness of private landowner)	Public land Willing private land owner Unwilling or unknown willingness of private landowner	3 2 0
Permitting Restrictions	Permitability is a measure of the expected level of effort to permit the project, based on knowledge that each type of permit takes varying amounts of time. Some common permits include Stormwater Construction, Local Zoning, Act 250 amendments, VTRANS ROW, etc.		
Project and Permitting complexity (# of permits required)	0-2 (2= simple permitting, 0= complex permitting-potential denial)	Simple permitting Complex issues/Potential permit denial	2 0
Infrastructure conflicts score	1 (1= 0, N=1)	No Yes	1 0
Project Cost (Adjusted for Inflation to 2021)	Enter engineering estimate + construction estimate (no points). Cost is estimated cost for each project. See sheet "BMP Cost Estimates Worksheet" for the breakdown of the project cost calculations. Project cost was adjusted for inflation to the current year.		
Cost Rounded to Nearest \$1,000	The estimated project cost rounded to the nearest \$1,000.		
Cost per Impervious Acre Managed	This is an intermediate metric used to show a normalized quantity. It is not used in the ranking.		
Cost per lb P Removed	Based on project costs shown in a normalized quantity.		
Project efficiency (\$/lbs. of P removed) (Score)	1-12 (Use natural grouping of \$/lbs. removed). The lower the cost per pound of TP removed, the higher the score.	<\$52,000 \$48,000-\$52,000 \$44,000-\$48,000 \$40,000-\$44,000 \$36,000-\$40,000 \$32,000-\$36,000 \$28,000-\$32,000 \$24,000-\$28,000 \$20,000-\$24,000 \$16,000-\$20,000 \$12,000-\$16,000 <\$12,000	1 2 3 4 5 6 7 8 9 10 11 12
Ease of O/M	This criteria is based on the ease of operation and maintenance for specific categories of practices. Stormwater facilities all require some amount of annual maintenance, with some BMP's requiring significantly more operational resources than others.		
Ease of O&M and ease of access for O&M	0-2 (based on municipal input on what is easiest to maintain, 0=high maintenance, 2=easy maintenance)	easy maintenance high maintenance	2 0
Total Feasibility Score	Out of 20		20
Other Project Benefits/ Constraints	This criteria is to account for indirect project benefits like infrastructure improvements (e.g. aging culvert replacement, wetlands enhancement, or if it addresses an expired permit).		
Infrastructure Improvement (e.g. Culvert Replacement)		Infrastructure Improvement (e.g. Culvert Replacement)	1
Educational/Recreational Benefit	This criteria is to account for indirect project benefits like infrastructure improvements, community benefits, habitat creation, etc.	Educational/Recreational Benefit	1
Natural Habitat Creation/Protection		Natural Habitat Creation/Protection	1
Outfall Erosion Control		Outfall Erosion Control	1
Connected to receiving water	3=all runoff infiltrates on site, 2= runoff receives some treatment before reaching receiving water. 1=runoff drains via infrastructure directly to receiving water with no erosion or additional pollutant loading, 0=runoff drains directly to receiving water	all runoff infiltrates on site runoff receives some treatment before reaching receiving water runoff drains via infrastructure directly to receiving water with no erosion or additional pollutant loading runoff drains directly to receiving water	3 2 1 0
Flood Mitigation	Flood mitigation is categorized by the scale of the impact.		
Flood Mitigation (score)	Known problem	Known None	1 0
Existing local concerns Score		Known None	1 0
Total Co-benefits Score	Out of 9		9
Total Score	This field shows the total score for this project as defined by the sum of the above described criteria.		
BMP Rank	A ranking of each of the projects as defined by the total score where the highest scores indicate the highest rank. When the Total Score values were the same for multiple projects, the impervious area managed was used as a tie breaker. The higher the impervious cover managed, the higher the ranking.		

Color indicators

- Basic site information
- Supporting data for Water Quality criteria
- Water Quality Score
- Total Water Quality Score
- Supporting data for Feasibility criteria
- Other Co-Benefits Score
- No longer used criteria score



BMP ID	Latitude	Longitude	Project Name	Proposed BMP Practice Type	Describe Proposed BMP Practice(s)	Known Project Constraints	Hydrologic Soil Group	Stormwater Permit(s)	Act 250 Permits	Hydrologic Connectivity	Drainage Area (acres)	TP Yield (lb/yr)	TP Reduction (lb/yr)	TP Reduction (lbs/yr)	TP Removal (%)	TP Removal (score)	Impervious Area Managed (acres)	Impervious Area Managed (Score)	Percent Impervious	Pervious Area Managed (acres)	BMP Storage Volume (ft³)	% Recharge Criteria Score	Streambank/Gully Erosion Mitigation	GI opportunity	Land Owner Description	Public land or Private Landowner support	Permitting Restrictions	Permitting Restrictions (score)	Infrastructure Conflicts (Score)	Project Cost (Adjusted for inflation to 2024)	Cost Rounded to Nearest \$1,000	Cost per Impervious Acre Managed	Cost per lb P Removed	Cost per lb P Removed (Score)	Ease of O/M	Ease of O/M Score	Infrastructure Improvement	Educational or Recreational benefits	Natural habitat creation/protection	Outfall erosion control	Connected to receiving water	Flood Mitigation (score)	Existing local concern	Total Score	BMP Rank
MLT063	44.62907	-73.13527	Christemly Ln N	Dry Well	Dry well to capture runoff from Christemly Ln cut-de-sac and Sammamaki Cr.		A (assumed, no rating mapped)			Semi-Connected	7.07	4.29	3.76	8.30	87.7%	4	2.94	3	41.62	4.13	6927	2			ROW	3	simple permitting	2	1	\$97,314	\$97,000	\$33,063	\$ 11,729	12	easy maintenance	2							29	1	
MLT061	44.63160	-73.13761	Bear Trap Ln	Infiltration Basin	Direct drainage from north side of Bear Trap Rd and catchbasin on south side to basin on town owned land in corner		A			Connected	23.05	6.39	5.19	11.45	81.2%	4	1.25	2	5.43	21.80	4250	2			Town	3	simple permitting	2	1	\$10,000	\$10,000	\$7,994	\$ 874	12	easy maintenance	2							28	2	
MLT001	44.64599	-73.09844	North Rd Culvert	Sand filter (w/ underdrain)	Management along road and stabilization of erosion in ditch		C/D			Connected	127.18	32.86	7.95	17.52	24.2%	4	4.25	4	3.34	122.94	8000	0			ROW	3	simple permitting	2	1	\$191,169	\$191,000	\$45,023	\$ 10,913	12	easy maintenance	2							28	3	
MLT059	44.64747	-73.10738	Maplewood Ave	Infiltration Basin	Direct two catchbasins to greenspace in cut-de-sac and create infiltration basin		C/D			Connected	2.52	1.62	1.43	3.15	88.4%	3	1.15	2	45.51	1.37	2104	2			ROW	3	simple permitting	2	1	\$26,232	\$26,000	\$22,875	\$ 8,321	12	easy maintenance	2							27	4	
MLT019	44.63355	-73.10973	Milton Elementary 2	Infiltration Chambers	End of pipe treatment for large drainage areas	Difficult to implement, existing stormwater infrastructure including nearby sewer separator	A	3319-9010.R 3319-9015.		Connected	14.54	10.24	6.56	14.47	64.1%	4	7.61	4	52.34	6.93	8000	2			School	0	simple permitting	2	0	\$149,850	\$150,000	\$19,691	\$ 10,356	12	easy maintenance	2		1					27	5	
MLT044	44.61592	-73.12274	Tennis Courts	Infiltration Trench	Infiltrate runoff from courts		A			Connected	0.69	0.49	0.39	0.86	80.3%	2	0.59	2	85.78	0.10	859	2			Town	3	simple permitting	2	1	\$10,000	\$10,000	\$17,005	\$ 11,618	12	easy maintenance	2		1					27	6	
MLT016	44.64066	-73.11288	Ice House Rd	Infiltration Basin	Manage drainage prior to river in a bioretention / infiltration trench or dry well		A			Connected	1.38	1.12	0.96	2.11	85.6%	3	0.88	2	64.15	0.49	1316	2			ROW	3	simple permitting	2	1	\$25,000	\$25,000	\$28,281	\$ 11,842	12	easy maintenance	2							27	7	
MLT058	44.63365	-73.12344	Riverside Dr	Infiltration Basin	Remove impervious at the NE corner of road and install infiltration basin		A			Semi-Connected	1.32	0.86	0.76	1.67	88.5%	2	0.61	2	46.27	0.71	1128	2			ROW	3	simple permitting	2	1	\$5,000	\$5,000	\$8,184	\$ 2,990	12	easy maintenance	2							26	8	
MLT062	44.66032	-73.12648	Lava Ct	Infiltration Basin	Direct swale drainage to greenspace in cut de sac for infiltration		A			Semi-Connected	4.46	2.19	1.99	4.38	90.6%	4	1.29	2	28.91	3.17	2198	2			ROW	3	complex permitting	0	1	\$27,750	\$28,000	\$21,502	\$ 6,394	12	easy maintenance	2							26	9	
MLT025	44.62905	-73.11428	Mason End Dr	Infiltration Basin	Infiltration basin within cut-de-sac		A	40019; 40018B		Not Connected	2.09	1.35	1.16	2.57	86.1%	3	0.92	2	41.00	1.11	1749	2		1	ROW	3	complex permitting	0	1	\$25,000	\$25,000	\$27,201	\$ 9,741	12	easy maintenance	2							26	10	
MLT011	44.62795	-73.11911	Checkerberry Sq	Infiltration Basin	Infiltrate runoff prior to discharge to existing gulley	Steepness	A	3374-9010.R 400723		Connected	1.91	1.30	1.12	2.45	86.3%	3	0.95	2	50.09	0.95	1517	2	1		ROW	3	complex permitting	0	0	\$25,000	\$25,000	\$25,205	\$ 10,083	12	easy maintenance	2			1				26	11	
MLT056	44.63466	-73.12954	MWW Treatment Plan N	Infiltration Basin	Install infiltration basin at north end of swale area		A/D	EJ05-0097 400046		Semi-Connected	3.33	1.55	1.35	2.98	87.1%	3	0.87	2	26.11	2.46	1686	2			Town	3	complex permitting	0	1	\$14,013	\$14,000	\$16,104	\$ 4,705	12	easy maintenance	2							25	12	

BMP Cost Estimate Worksheet

Field	Explanation	Cost Estimation Criteria	Cost
BMP ID	This is an assigned ID code unique to each project.		
Project Name	This field contains the name of the project.		
BMP Description	A description of the proposed BMP.		
Impervious Acres	The impervious area managed by the BMP in acres.		
Volume Managed (cft)	The volume of stormwater runoff managed by the practice reported in cubic feet.		
Base Unit Cost (\$/cft)	This field contains the base unit cost for each BMP type. This base cost is dependent on the BMP type.	Porous Asphalt	\$5.32
		Infiltration Basin	\$6.24
		Underground Chamber (infiltration or detention)	\$6.25
		Detention Basin / Dry Pond	\$6.80
		Gravel Wetland	\$8.78
		Infiltration Trench	\$12.49
		Bioretention	\$15.46
		Sand Filter	\$17.94
		Porous Concrete	\$18.07
Site Adjustment Factor	This field contains the site adjustment factor for each BMP. This adjustment factor is dependent on the site conditions of the BMP as well as whether the BMP is a new practice or a retrofit of an existing practice.	Existing BMP retrofit	0.25
		Adjustment factor for large aboveground basin projects	0.5
		New BMP in undeveloped area	1
		New BMP in partially developed area	1.5
		New BMP in developed area	2
Base Construction Cost	This field is auto calculated and is based on the product of the previous three fields (Volume Managed (cft), Base Unit Cost (\$/cft), and Site Adjustment Factor)	Difficult installation in highly urban settings	3
Summed Project Cost	This field is auto calculated as the sum of the Base Construction Cost, Permits & Engineering Contingency, and the Land Cost.		
Minimum Project Cost (\$5-10k for simple retrofits; \$25k otherwise)	This field contains the minimum project cost. This ensures that costs for small projects are not underestimated.		
Permits & Engineering Contingency	A 20% or 35% contingency for permitting and unknowns related to construction given this early planning project stage. The contingency is dependent on project size and complexity.		
Final Project Cost (2014 costs)	This field is auto calculated and is the higher of either the Summed Project Cost field or the Minimum Project Cost field.		
Final Project Cost (including inflation to 2021)	This field is auto calculated and is the higher of either the Summed Project Cost field or the Minimum Project Cost field. It includes inflation from 2014 to 2021.		
Cost/ Impervious Acre	This field is auto calculated as the Base Construction Cost added to the Permits & Engineering Contingency divided by the Total Impervious Acres managed.		
Cost per lb of P Removed	This field is auto calculated as the Base Construction Cost added to the Permits & Engineering Contingency divided by the Total lbs of Phosphorus managed.		
O&M	The base construction cost is multiplied by a 30% O&M cost provided that the total cost does not exceed \$10,000. A cost of \$10,000 is applied in this instance. This is an auto calculated field.		

Project Name	BMP Description	Impervious Acres	TP Removal (lbs)	Volume Managed (cft)	Base Unit Cost (\$/cft)	Site Adjustment Factor	Base Construction Cost	Summed Project Cost	Minimum Project Cost (\$5-10k for small simple, otherwise \$25k)	Permits & Engineering Contingency	Final Project Cost (2014 costs)	Final Project Cost (including inflation to 2021)	Cost/ Impervious Acre	Cost per lb P Removed	O&M
North Rd Culvert	Sand filter (w/ underdrain)	4.25	17.52	8000	\$17.94	1	\$143,520	\$ 172,224	\$ 25,000	20%	\$ 172,224	\$ 191,169	\$ 40,561	\$ 10,913	\$ 4,306
Howard Dr	Infiltration Trench	0.61	2.07	1151	\$12.49	1	\$14,376	\$ 17,251	\$ 25,000	20%	\$ 25,000	\$ 25,000	\$ 40,917	\$ 12,102	\$ 431
River St Park	Bioretention (infiltrating)	0.12	0.33	750	\$15.46	1	\$11,595	\$ 13,914	\$ 10,000	20%	\$ 13,914	\$ 15,445	\$ 115,950	\$ 46,294	\$ 348
Lamoille Terr N	Infiltration Basin	0.57	1.89	1009	\$6.24	1	\$6,296	\$ 8,500	\$ 25,000	35%	\$ 25,000	\$ 25,000	\$ 43,706	\$ 13,210	\$ 189
Lamoille Terr S	Infiltration Basin	0.49	1.51	907	\$6.24	1.5	\$8,490	\$ 11,461	\$ 25,000	35%	\$ 25,000	\$ 25,000	\$ 50,710	\$ 16,512	\$ 255
Railroad St Ditch N	Grass Channel	0.44	0.14	600	\$6.24	1	\$3,744	\$ 5,054	\$ 10,000	35%	\$ 10,000	\$ 10,000	\$ 22,936	\$ 69,965	\$ 112
Railroad St Ditch S	Wet pond/ Created Wetland	0.44	1.33	8500	\$6.80	1	\$57,800	\$ 69,360	\$ 25,000	20%	\$ 69,360	\$ 76,990	\$ 159,083	\$ 57,932	\$ 1,734