Indian Brook Flow Restoration Plan(FRP) Project
BMP Ranking Criteria Key
January 26th, 2015

Table A-5-1 BMP Ranking Criteria Key

Category	ID	Criteria	Technical Description	Description
Cost/Operations	A	Project Cost	The project costs were grouped into categories from >$50,000 to >$1,000,000 based on the range of projects proposed. Cost estimates were developed using the latest unit costs from VTrans as well as local experience. More expensive projects are ranked lower.	Project Costs include additional engineering, permitting, and construction. Transportation and utility conflicts, as well as overall constructability is also reflected in the cost.
	B	Ease of O/M	This criteria is based on experience with the general ease of operation and maintenance for specific categories of practices.	This criteria is based on general knowledge of the ease of operation and maintenance for specific categories of practices. Most stormwater facilities require some amount of annual maintenance, with some BMP's requiring significantly more operational resources than others.
Project Design Metrics	C	Impervious Acres Managed (ac)	Natural groupings within the range of impervious managed for the proposed projects were identified. More impervious managed receives a higher score.	The more impervious managed by a project, the higher the potential pollutant reduction. Additionally, the goal of the FRP is to manage existing impervious surfaces.
	D	Channel Protection Volume (CPv) Mitigated, (i.e.. 1-year Storm)	Groupings within the range of CPv volume storage were identified. The largest grouping receives the highest score. The CPv was estimated in HydroCAD, using local rainfall data.	The Channel Protection Volume (CPv) is the volume of stormwater runoff generated from the 1-year design storm (1.96" in Essex). A BMP which provides CPv storage was determined to reduce the High-flow (Q0.3%), which is the flow rate exceeded 0.3% of the time (output from the State's BMPDSS model). Mitigating the CPv reduces channel erosion and excessive pollutant loading from streams.
	E	Volume Infiltrated (ac-ft)	Natural groupings within the range of volumes infiltrated for the BMPs were identified to which relative points were be assigned. The largest volume infiltrated was assigned the highest score. Volumes were calculated in HydroCAD.	The Volume Infiltrated indicates the amount of stormwater runoff that is infiltrated into the groundwater, and provides baseflow for the stream. The TMDL flow targets include a low-flow target, which is addressed by an infiltration-based BMP.
	F	Water Quality (WQ) Volume Mitigated	The WQ volume mitigated is defined as the runoff volume generated from the 0.9" rainfall that is stored in the BMP's permanent pool. Three categories were identified for the WQ volume 1) 100% WQ volume control which is the best-case standard for the EFA procedure. 2) >= 20% WQ volume as required for redevelopment projects, and 3) less than 20% WQ volume.	The WQ volume mitigated is an indicator of the reduction in pollutant runoff from 90% of annual storm events, approximated to be an 80% removal of the Total Suspended Solids (TSS) and 40% total phosphorus (TP) load.
	G	Primary or Secondary BMP	Primary BMP is the main control practice, whereas a secondary BMP drains to a primary BMP. Primary BMPs have a higher weighting.	A primary BMP is the main control practice, like a large end-of-pipe detention pond. A secondary BMP is located within the drainage area of a primary BMP, providing additional flow control and treatment. Secondary BMPs are weighted less than primary BMPs in terms of reducing stormwater runoff.
Project Implementation	H	Permitabilty	Permitabilty is simplified into two categories to reflect the common scenarios in permitting, as 1) minimal permitting 2) Complex permitting issues.	Permitabilty 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.
	I	Land Availability	Public land is preferred, followed by regulated private land, and private land where the owners are known to be open to participate. Private land, in which participation of the owner is unknown is lower priority.	Land availability is critical for BMPs requiring open space for detention and access for the Municipality involved. Properties owned by the Municipality (Public) are ranked the highest, followed by privately owned land with an expired permit, which provides leverage to retrofit the BMP. The next priority is private land with a land owner who is known to be cooperative. If a land owner is known to not be cooperative, points were subtracted from the ranking.

Category	ID	Criteria	Technical Description	Description
Other Project Benefits/Constraints	J	Flood Mitigation	Flood mitigation is categorized by the scale of the impact. A neighborhood flooding issue is weighed more heavily than a localized drainage issue.	Flood mitigation is categorized by the scale of the impact. A neighborhood flooding issue is weighed more heavily than a localized drainage issue.
	K	TMDL Flow Target Addressed (Q03, Q95)	More weight is on BMPs that address both TMDL targets- the high-flow (Q0.3%) and low-flow targets (Q95%). The high-flow target is addressed by detention BMPs which provide storage of the CP volume (1-year storm). The low-flow target is addressed by BMPs which infiltrate the 1-year storm volume.	The goal of the FRP is to implement projects which address the TMDL flow targets. The high-flow target is measured as a **reduction** in the stream flow rate exceeded 0.3% of the time, while the low-flow target is an **increase** in the stream flow rate exceeded 95% of the time (baseflow). Projects which address both targets through storage or infiltration of the 1-year design storm are weighted the highest, followed by projects which address just the high-flow. Projects which do not address the full 1-year storm volume are weighted the lowest.
	L	Lake Champlain Phosphorus TMDL	Yes or no whether the proposed practice will provide benefit toward the Lake Champlain Phosphorus TMDL. This will be determined once the TMDL compliance metrics are released.	The Lake Champlain Phosphorus TMDL has been developed in the effort to reduce nutrient loading and consequential toxic algal blooms in Lake Champlain. The TMDL will require stormwater BMPs to meet a certain level of Total Phosphorus reduction. Each BMP will be evaluated against the TMDL compliance metrics, and scored yes or no if the project meets the TMDL standards.
	M	Other Project Benefits/Constraints	This criteria is to account for indirect project benefits (+) like infrastructure improvements (e.g. aging infrastructure replacement, wetlands enhancement, and if it addresses an expired permit). This criteria also accounts for specific project constraints (-) due to potential erodible soils and bank destabilization.	This criteria is to account for indirect project benefits like infrastructure improvements, community benefits, habitat creation, etc., as well as additional project constraints like potential erodible soils causing bank destabilization concerns.
	N	Annual Total Suspended Solids (TSS) Yield Mitigated (lbs.) *WinSLAMM Model result	The annual TSS Yield mitigated by the proposed BMP was estimated with the Source Loading and Management Model (WinSLAMM), a continuous simulation urban runoff and water quality model. This criteria provides a metric for the WQ benefit of the project.	The annual TSS Yield mitigated by the proposed BMP was estimated with the Source Loading and Management Model (WinSLAMM), a continuous simulation urban runoff and water quality model. This criteria provides a metric for the WQ benefit of the project.
	O	Annual Total Phosphorus (TP) Yield Mitigated (lbs.) *WinSLAMM Model result	The annual TP Yield mitigated by the proposed BMP was estimated with the Source Loading and Management Model (WinSLAMM), a continuous simulation urban runoff and water quality model. This criteria provides a metric for the WQ benefit of the project.	The annual TP Yield mitigated by the proposed BMP was estimated with the Source Loading and Management Model (WinSLAMM), a continuous simulation urban runoff and water quality model. This criteria provides a metric for the WQ benefit of the project.