APPENDIX E

NPCA Stormwater Guidelines Table

Table 2 – Summary of Stormwater Management Policies and Technical Guidelines

Topic	General Policy Statement	Technical Guidelines		
Stormwater Management Control	Sufficient SWM controls are required by the NPCA to ensure that flooding, pollution, surface erosion and conservation of land impacts due to development do not occur.	Flooding/Quantity Control		• Generally, the SWM controls required are to match or reduce post-development peak flows to pre-development peak flows for a range of design storm events (2, 5, 25 and 100-year storm events, unless directed otherwise). • Different design storm distributions and durations shall be assessed in order to determine the critical storm that yields the lowest pre-development peak flow and the highest post-development peak flow. At a minimum, the 3-hour Chicago, 12-hour AES and 24-hour SCS distributions should be considered. • All SWM plans are to assess the capacity of the receiving system in order to indentify hydraulic constraints or existing flooding hazards. These existing constraints/risks may require additional quantity controls over and above the typical post to pre peak flow controls. • Consideration may be given to not requiring peak flow controls if the assessment of receiving system capacity demonstrates little or no benefit to such controls. This would include scenarios such as discharge to major river systems or directly to a Lake. Pre-consultation with the NPCA and additional approval requirements are necessary for this to be considered. • Major overland flow routes are to be designed to have sufficient capacity for the Regulatory event (100-year or Regional storm event, as applicable).
		Quality Control	TSS	• A minimum of “Normal” level of water quality treatment, as defined in the MOE design guidelines (2003) is required for all SWM facilities. This is equivalent to a 70% TSS reduction. • “Enhanced” level of water quality treatment (80% TSS reduction) will be required on all watercourses containing Type 1 – critical fish habitat. • A detailed assessment of the receiving system will be mandatory for any proposed reduction in the level of water quality treatment required on a development site. The assessment contents must be appraised and approved by the NPCA prior to completion.
			Temperature	• The SWMP for a development site is required to include measures to eliminate or mitigate adverse temperature impacts due to the increase in impervious surfaces and the ponding of water in SWM facilities. Particular attention is to be given to those systems discharging to

Topic	General Policy Statement	Technical Guidelines		
				coolwater or coldwater receiving systems. • Post-development water temperature regime is to mimic or enhance the pre-development regime.
			Total Phosphorus	• Phosphorus removal targets will be typically provided for in the TSS removal targets, unless specific targets are developed through a management strategy.
			Spills	• SWM facility outlets are to be designed to allow the outlet to facilitate the containment of a spill. • Ensure sufficient access to SWM facility to allow spills to be cleaned.
		Water Balance		• As per the SWM Design Manual (MOE, 2003), water balance impacts should be evaluated during the design of a site stormwater management system. All efforts should be made to match pre- and post-development infiltration volumes in order to maintain groundwater recharge. • Hydrogeologically sensitive areas shall be identified as part of the SWM plan. • Untreated stormwater shall be prevented from being directly infiltrated.
		Erosion/Geomorphologic Considerations		• Quantity control to detain and release the 25mm, 4-hour Chicago design storm over a 24-hour period shall be provided for all receiving systems that are demonstrated to be stable watercourses or for proposed development that comprise less than 10% of the total area that drains to the receiving system. • The geomorphologic assessments and criteria contained in the SWM Design Manual (MOE, 2003) shall be used for all receiving systems that are unstable under existing conditions or for proposed developments that comprise a significant proportion of the total area draining to the receiving system. • Criteria identified in larger-scale studies that have directly evaluated the receiving systems, such as Subwatershed Studies or Master Drainage Plans, shall take precedence over the criteria presented herein.
		Construction Erosion and Sediment Control		• All applicants must include an Erosion and Sediment Control plan demonstrating that fish habitat and water quality are not affected by sediment from the property during or following site construction. • Guidelines and strategies to develop Erosion and Sediment Control plans can be found in the *Erosion and Sediment Control Guidelines for Urban Construction* manual (GGHA CA, 2006).

Topic	General Policy Statement	Technical Guidelines	
		Planting Considerations	• As part of SWM facility designs, planting strategies are required to address functional treatment aspects, including operations, public safety, and to help the facility blend in with the natural environment. • Native vegetation is to be used in the facility design (see **Appendix S** for the approved plant species list). • Consideration of nearby natural heritage features should be made in developing a planting strategy. • The different moisture zones within a SWM facility should be considered in choosing vegetation species: deep water, shallow water, shoreline/fringe zone (extended detention), flood fringe and upland areas.
		Oil/Grit Separators	• Oil/grit separators for stormwater treatment are discouraged for use in Greenfield residential development. • The use of oil/grit separators may be considered for commercial, industrial, or infill developments. • Consultation with the NPCA and the municipality is required in order to consider the use of oil/grit separators.
Location of Stormwater Management Facilities	The NPCA does not support the following SWM practices: 1. On-line SWM facilities for water quality; 2. Using natural wetlands as a SWM facility; 3. Locating SWM facilities in natural hazard areas, such as floodplains or erosion hazards, except outlets; and 4. Locating SWM facilities in Significant Natural Heritage Features.	• The discouragement of locating SWM facilities within natural hazard/regulated areas arises from the fact that SWM facilities are considered development, and as such are subject to the same development regulatory processes. Outlet works are the sole exception, since they must be located close to a receiving waterbody, most likely within its floodplain. • In certain circumstances, the NPCA is prepared to acknowledge that due to technical, economic and/or environmental considerations and constraints, SWM facilities may be required to be located within or close to natural hazard areas. Such an allowance would depend on the demonstration that the SWM facility would not impact the natural hazard area (i.e., no increase to flooding risks, etc.) and that the hazard area would not impact the function or lifespan of the SWM facility. Note that these facilities may be subject to additional detailed design requirements above and beyond those described in this manual or prescribed by the municipality. • SWM facilities are not permitted to be located within the 100-year floodplain or the hydraulic floodway, whichever is greater.	
Large-scale Stormwater Planning	The planning and implementation of SWM systems are encouraged by the NPCA to be performed on a catchment-scale basis, through the completion of Subwatershed Plans, Master Drainage Plans or other such strategies.	• Large-scale stormwater planning at the watershed, subwatershed or community plan level facilitate the most effective management strategies to reduce the impact of development on the natural environment. These studies can guide future development in ways that protect surface water features, groundwater features and natural areas. Refer to Section 2.3 and 2.4 of the SWM Design Manual (MOE, 2003) for an overview of the contents and benefits of large-scale SWM planning.	