10.13 WATER QUANTITY

All of the drinking water quantity threats identified in the CTC Source Protection Region are threats to groundwater-sourced municipal drinking water supplies. Through a tiered process of water budget analyses as set out in the *Technical Rules* under section 107 of the *Clean Water Act, 2006*, SPCs are required to identify the vulnerable areas, enumerate the activities that pose a drinking water threat, and determine the threat level of the activity. At the final stage (Tier 3 Water Budget analysis), specific vulnerable areas (Wellhead Protection Areas for Quantity called WHPA-Q) are delineated and significant drinking water threat activities are identified. WHPA-Q1 refers to the area where activities that take water without returning it to the same source may be a threat. WHPA-Q2 refers to the area where activities that reduce recharge may be a threat.

The Tier 3 Water Budget for the areas around municipal wells in Orangeville, Mono and Amaranth was completed in early 2011. One WHPA-Q1, -Q2 was assigned a significant risk level which means that existing and future threat activities (see below) in this area can be significant quantity threats. In late 2013 the Tier 3 Water Budget was completed for the Region of Halton's wells serving Acton and Georgetown in the Town of Halton Hills. Two WHPA-Q1, -Q2 vulnerable areas where identified where activities can be significant quantity threats. The WHPA-Q1, -Q2 around the wells serving Acton was assigned a significant risk level. The WHPA-Q1, -Q2 vulnerable area around wells serving Georgetown was assigned a moderate risk level which means that only future activities can be significant quantity threats. In 2013, the Tier 3 Water Budget was completed for the Regions of York and Durham wells in the Toronto and Region Source Protection Area. This WHPA-Q1, -Q2 was assigned a moderate risk level.

Some of the policies outlined below apply only to specific municipalities while the majority apply to the WHPA-Q1, -Q2 vulnerable areas throughout the CTC Source Protection Region.

10.13.1 Taking Water Without Returning It to the Same Aquifer

Definition

Any activity that takes water from an aquifer without returning the water to that aquifer is a threat if it results in a depletion of available supply which could impair the long-term viability of a water system. Municipal and private wells are typical examples of such water taking activities, along with industrial uses such as agriculture irrigation and aggregate extraction below the water table which requires pumping operations. When a Permit to Take Water (PTTW) is required, the province assesses the request to determine if the water taking is sustainable and issues a PTTW with appropriate conditions, to protect the ecosystem and other users. A PTTW is not generally required for private domestic wells as the amount of water taken is generally less than 50,000 litres per day which is the minimum threshold requiring approval.

Why is this Activity a Threat to Drinking Water Sources?

Taking water without returning it to the same aquifer can lead to the depletion of water in the aquifer, which reduces the amount of water available for municipal water supplies. If the available water in the aquifer drops below the safe threshold levels, municipal wells cannot produce enough to supply water demands which can lead to a water shortage.

10.13.2 Recharge Reduction

Definition

When recharge to an aquifer is reduced, the available water supply becomes depleted and can impair the long-term viability of a water system. Typical examples which reduce recharge include existing and planned land use developments, such as residential subdivisions, employment areas and undifferentiated suburban lands. Any conversions of land to an impervious surface, such as paved parking lots, do not let water travel through the ground to recharge the aquifer.

Why is this Activity a Threat to Drinking Water Sources?

Activities that reduce the recharge of an aquifer reduce the water available for municipal water supplies. Impervious surfaces impede the ability for the aquifer to recharge and continue to provide water over the long term.

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-1	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body	MOECC	C	**Prescribed Instrument** (Permit to Take Water Policies in WHPA-Q1 with Significant Water Quantity Threats) Within the Tier 3 Water Budget WHPA-Q1 where a water taking is or would be a significant water quantity threat, the Ministry of the Environment and Climate Change shall ensure each water taking threat ceases to be, or does not become significant, through actions the Director considers appropriate on a case by case basis, such as: 1) Reviewing all existing Permits to Take Water, located within WHPA-Q1 with a significant risk level, in consultation with other Ministries (as required), the affected municipality, relevant conservation authorities, and permit holders, and amend the permits where necessary to ensure that: a) municipal water supply requirements for the allocated and planned quantity (per the current approved population and employment projections of the most recent Growth Plan for the Greater Golden Horseshoe) will be met on a sustainable basis; and b) the hydrological integrity of municipal wells in the vulnerable areas will be maintained. 2) Issuing Permits to Take Water for new or increased takings, located within WHPA-Q1 with moderate or significant risk levels, only if it can be satisfactorily demonstrated, using the findings of the most recently approved Tier 3 Water Budget Model and other available data, where appropriate, that the taking: a) can be maintained on a sustainable basis; b) will not affect the ability of the aquifer to meet the municipal water supply requirements for the current and planned service capacity; and c) will ensure the hydrological integrity of municipal wells will be maintained.	Existing & Future: WHPA-Q1 with a significant risk level See Maps 3.1 3.2 Future: WHPA-Q1 with a moderate risk level See Maps 3.3 3.4	Future: Immediately (T-3) Existing: 3 years (T-1)	GEN-3 DEM-2 DEM-8	MON-4

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-2	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body	Planning Approval Authority	A	**Land Use Planning** (Planning Policies in WHPA-Q1 with Significant Water Quantity Threats) Within the Tier 3 Water Budget WHPA-Q1 where a water taking is or would be a significant water quantity threat, the relevant Planning Approval Authority shall ensure water taking does not become a significant drinking water threat by: 1) Only permitting new development if the new development does not require a new or amended Permit to Take Water; 2) Only providing final approval for new development that requires a new or amended Permit to Take Water once the Ministry of the Environment and Climate Change has determined that the proposed taking will not become a significant water quantity threat; 3) Only approving settlement area expansions within WHPA-Q1 as part of a municipal comprehensive review where the applicable provincial planning criteria have been met and the following has been demonstrated: a) the aquifer has sufficient capacity to sustainably provide municipal water services to the expanded settlement area; b) the expansion will not adversely impact the aquifers ability to meet the municipal water supply requirements for current and planned service capacity, for other permitted takings, or for wastewater receiving bodies; and c) the hydrological integrity of municipal wells will be maintained.	Existing & Future: WHPA-Q1 with a significant risk level See Maps 3.1 3.2 Future: WHPA-Q1 with a moderate risk level See Maps 3.3 3.4	Future: Immediately (T-9) Amend OPs for conformity and ZBLs within 3 years of OP approval (T-8)	DEM-1 DEM-9	MON-1

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-3	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body	MMAH MOECC	K	**Specify Action** (Growth Management/Planning Ministries to Review Growth in WHPA-Q1 with Significant Water Quantity Threats) Within a Tier 3 Water Budget WHPA-Q1 identified as having significant water quantity threats, the Provincial Ministries specified below should undertake the following to ensure the provision and distribution of water supply for municipal population and employment growth forecasts does not create a new, or increase an existing, significant water quantity threat: 1) The Ministry of Municipal Affairs and Housing in consultation with the Ministry of the Environment and Climate Change and any affected municipalities should use the Tier 3 Water Budget information and other available data to ensure that municipal Official Plan growth forecasts and distributions will not result in creating or worsening a significant water quantity threat, given water quantity constraints identified in Tier 3 Water Budget model areas; and 2) The Ministry of Municipal Affairs and Housing should take into consideration water quantity constraints identified through Tier 3 Water Budgets, and other available data, during its review of the population forecasts contained in the Growth Plan for the Greater Golden Horseshoe, in consultation with relevant municipalities.	Existing & Future: WHPA-Q1 with a significant risk level See Maps 3.1 3.2 Future: WHPA-Q1 with a moderate risk level See Maps 3.3 3.4	Existing & Future: Consider within 2 years (T-15)	DEM-8	MON-4

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-4	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body	Municipality	E	**Specify Action** (Municipal Water Conservation Plans) Municipalities responsible for the production, treatment, and storage of water, who have a municipal well and/or whose residents are served by a municipal water supply within the Tier 3 Water Budget WHPA-Q1 shall develop and/or update Water Conservation Plans to ensure they are an effective tool to support sustainable water quantity by reducing consumption and therefore the demand for water.	Existing & Future: WHPA-Q1 with a significant risk level See Maps 3.1 3.2 Future: WHPA-Q1 with a moderate risk level See Maps 3.3 3.4	Existing & Future: Initiate within 2 years (T-16)	N/A	MON-1

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-5	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body	Municipality	E	**Education and Outreach** Municipalities responsible for the production, treatment, and storage of water and/or with jurisdictional lands within a Tier 3 Water Budget WHPA-Q1 identified as having significant water quantity threats shall undertake the following education and outreach initiatives to help ensure water supplies are protected and increase the effectiveness of water conservation efforts in their jurisdictions to reduce consumption and demand by: 1) Implementing education and outreach programs to ensure that property owners and businesses are aware of: a) their role in protecting water supplies and conserving water; b) actions that can be taken to protect water supplies and use less water; and c) financial incentive programs and projects that may be eligible for funding under future funding of the Ontario Drinking Water Stewardship Program; or	Existing & Future: WHPA-Q1 with a significant risk level See Maps 3.1 3.2	Existing & Future: Implement within 2 years (T-10)	GEN-8	MON-1
				2) Reviewing any similar programs that may already exist and update them where necessary to ensure their effectiveness.				
		MOECC	K	3) The Ministry of the Environment and Climate Change should provide municipalities with a list of appropriate education and outreach materials that provide information and guide actions that can be taken to reduce the usage of drinking water for delivery by the municipality.				MON-4

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-6	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body	Municipality	E	**Specify Action** (Joint Municipal Water Management) The Dufferin County municipalities that share a water source within a Tier 3 Water Budget WHPA-Q1 identified as having significant water quantity threats shall develop a Joint Municipal Water Supply Management Model, and implement within 3 years from the date the Source Protection Plan takes effect. This management model shall facilitate the planning and management of water supply sources to ensure sustainability of a long term water supply in each municipality and ensure that water quality and quantity is maintained or improved such that activities cease to be, or do not become, significant drinking water threats in the WHPA-Q1. The municipalities shall report to the Ministry of the Environment and Climate Change and the Ministry of Municipal Affairs and Housing on the options and proposed management model within 1 year from the date the Source Protection Plan takes effect.	WHPA-Q1 with a significant risk level (Orangeville, Amaranth, East Garafraxa and Mono) See Map 3.1	See Policy	DEM-7	MON-1
DEM-7	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body	MOECC MMAH	K	**Specify Action** (Province to Support Joint Municipal Water Management System or Authority) The Ministry of the Environment and Climate Change, in collaboration with the Ministry of Municipal Affairs and Housing and other affected provincial ministries and agencies, as required, should initiate meetings with the Dufferin County municipalities that share a water source within a Tier 3 Water Budget WHPA-Q1 identified as having significant water quality and quantity threats, to support the municipalities in developing mutually beneficial solutions to address water quantity and quality constraints within 1 year from the date the Source Protection Plan takes effect. And further, the Ministry of the Environment and Climate Change should provide technical support to the municipalities.	WHPA-Q1 with a significant risk level (Orangeville, Amaranth, East Garafraxa and Mono) See Map 3.1	See Policy	DEM-6	MON-4

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-8	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body	MOECC	K	**Specify Action** (MOECC to Adopt and Fund Maintenance of the Tier 3 Water Budget Model) The Ministry of the Environment and Climate Change should adopt and fund a Tier 3 Water Budget Model in a WHPA-Q1 identified as having a moderate or significant risk level and undertake the following to ensure it is maintained as the primary model to review existing and future Permits to Take Water, to allow municipalities and other provincial ministries (i.e., Ministry of Municipal Affairs and Housing and Ministry of Infrastructure) to evaluate growth projections and distributions, and to facilitate the review of planning applications by municipalities, where necessary, to ensure that these activities cease to be, or do not become, significant drinking water threats: 1) Through the Permit to Take Water program, require municipal takers in WHPA-Q1 to monitor water quantity and supply data on a regular basis to assist in the upkeep of the model to determine any increase or reduction in significant water quantity threats; 2) Use the model with the most up-to-date data as an analysis and decision making tool; and 3) When necessary, contribute to funding for new continuous flow gauging stations in key surface water features and enhance conservation authorities existing Hydrometric Network in WHPA-Q1 to monitor long term trends in surface water quantity, study impacts of urbanization and climate change on aquifer recharge, and facilitate calibration of the model.	Existing & Future: WHPA-Q1 with a significant risk level See Maps 3.1 3.2 Future: WHPA-Q1 with a moderate risk level See Maps 3.3 3.4	Existing & Future: Consider within 2 years (T-15)	DEM-1 DEM-3	MON-4

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
DEM-9	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body	Municipality	E	**Specify Action** (Identifying Additional Water Supplies) Municipalities located within a Tier 3 Water Budget WHPA-Q1 with a significant risk level are encouraged to identify additional water sources outside of the WHPA-Q1 to reduce demand from well systems which have been identified with significant water quantity stress and to report to the Source Protection Authority on their progress within 3 years from the date the Source Protection Plan takes effect.	WHPA-Q1 with a significant risk level See Maps 3.1 3.2	See Policy	DEM-2	MON-1
DEM-10	An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body	Municipality	E	**Specify Action** York Region shall develop and implement a drought management plan using the Tier 3 water quantity risk assessment findings and modelling tool to prevent consumptive demand from becoming significant.	Future: WHPA-Q1 with a moderate risk level See Map 3.4	Existing & Future: Immediately (T-18)	N/A	MON-1

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
REC-1	An activity that reduces recharge to an aquifer	Planning Approval Authority	A	**Land Use Planning** (Planning Policies for Protecting Groundwater Recharge) For applications under the Planning Act within the Tier 3 Water Budget WHPA-Q2 identified as having significant water quantity threats, the relevant Planning Approval Authority shall ensure recharge reduction does not become a significant drinking water threat by: 1) Requiring new development and site alteration under the *Planning Act* to implement best management practices such as Low Impact Development (LID) with the goal to maintain predevelopment recharge. Implementation of best management practices is encouraged, but voluntary, for Agricultural Uses, Agriculture-related Uses, or On-farm Diversified Uses where the total impervious surface does not exceed 10 per cent of the lot. 2) Requiring that all site plan and subdivision applications to facilitate major development (excluding development on lands down-gradient of municipal wells in the Toronto & Region Source Protection Area [Map 3.5]) for new residential, commercial, industrial and institutional uses provide a water balance assessment for the proposed development to the satisfaction of the Planning Approval Authority which addresses each of the following requirements: a) maintain pre-development recharge to the greatest extent feasible through best management practices such as LID, minimizing impervious surfaces, and lot level infiltration; b) where pre-development recharge cannot be maintained on site, implement and maximize off-site recharge enhancement (within the same WHPA-Q2) to compensate for any predicted loss of recharge from the development; and c) for new development (excluding a minor variance) within the WHPA-Q2 and within an Issue Contributing Area (for sodium, chloride or nitrates), the water balance assessment shall consider water quality when recommending best management practices and address how recharge will be maintained and water quality will be protected. The Planning Approval Authority shall use its discretion to implement the requirements of this policy to the extent feasible and practicable given the specific circumstances of a site and off-site recharge opportunities. (**REC-1** Continued on next page)	Future: WHPA-Q2 with a significant risk level See Maps 3.1 3.2 Future: WHPA-Q2 with a moderate risk level See Maps 3.3 3.4	Future: Immediately (T-9) Amend OPs for conformity and ZBLs within 3 years of OP approval (T-8)	N/A	MON-1

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
REC-1 Cont'd	An activity that reduces recharge to an aquifer	Planning Approval Authority	A	(**REC-1** continued from previous page) 3) Only approving settlement area expansions as part of a municipal comprehensive review where it has been demonstrated that recharge functions will be maintained on lands designated Significant Groundwater Recharge Areas within WHPA-Q2. 4) Amending municipal planning documents to reference most current Assessment Reports in regards to the Significant Groundwater Recharge Areas within WHPA-Q2.	Future: WHPA-Q2 with a significant risk level See Maps 3.1 3.2 Future: WHPA-Q2 with a moderate risk level See Maps 3.3 3.4	Future: Immediately (T-9) Amend OPs for conformity and ZBLs within 3 years of OP approval (T-8)	N/A	MON-1

Policy ID	Threat Description	Implementing Body	Legal Effect	Policy	Where Policy Applies	When Policy Applies	Related Policies	Monitoring Policy
REC-2	An activity that reduces recharge to an aquifer	RMO	H	**Part IV, s.58** When a Building Permit that is not subject to a site specific Planning Act application (excluding lands zoned Low Density Residential) is located within a Tier 3 Water Budget WHPA-Q2 identified as having a significant risk level, an activity that reduces the recharge to an aquifer is designated for the purpose of s.58 under the *Clean Water Act*, requiring risk management plans, where the threat would be significant. Without limiting other requirements, risk management plans shall require implementation of downspout disconnections and other best management practices to increase infiltration of clean water whenever modifications, additions or renovations are undertaken at existing properties or in new developments, with the goal of restoring or maintaining pre-development recharge.	Future: WHPA-Q2 with a significant risk level See Maps 3.1 3.2	Future: Immediately (T-7)	GEN-1 GEN-2	MON-2
REC-3	An activity that reduces recharge to an aquifer	Municipality	E	**Specify Action** 1) Within a Tier 3 Water Budget WHPA-Q2 with a significant risk level, the municipality shall develop and implement actions to be taken and an implementation schedule, to ensure that an activity which reduces aquifer recharge ceases to be a significant water quantity threat; such actions may include: a) reviewing options to maximize aquifer recharge; b) delivering an education and outreach program to inform property owners about actions that can be taken to protect aquifer recharge (e.g., site grading, rain gardens). The program may include incentives (such as rebates) to encourage best management practices; c) requiring the use of Low Impact Development in new development or retrofits; and d) passing a by-law to require downspout disconnection.	Existing: WHPA-Q2 with a significant risk level See Maps 3.1 3.2	Existing: Implement within 2 years (T-17)	GEN-8	MON-1
		MOECC	K	2) The Ministry of the Environment and Climate Change should provide municipalities with a list of appropriate education and outreach materials that provide information and guide actions that can be taken to protect aquifer recharge for delivery by the municipality.				MON-4