

Appendix 10 – Threats and Risk Assessment

Lower Thames Valley Source Protection Area Assessment Report

Threats and Risk Assessment Local Guidance



Thames-Sydenham and Region

Threats and Risk Assessment Local Guidance

Version 1.2
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1 Table of Contents

1	Table of Contents	2
1.1	List of Tables	2
2	Introduction.....	3
3	Background.....	4
4	Purpose and Objectives.....	5
5	Discussion.....	5
5.1	Studies.....	5
5.2	Threats Inventories.....	6
5.3	WHPA-E and F for GUDI Systems (beyond the scope of this local guidance)	8
5.4	Threats contributing to Issues (beyond the scope of this local guidance)	8
5.5	Conditions (beyond the scope of this local guidance)	9
5.6	Activities that are not included in the prescribed list.....	9
5.7	Future threats	10
5.8	Event Based Significant Threats (beyond the scope of this local guidance)	11
6	Deliverables	12
6.1	Tier 1 Deliverables.....	12
6.2	Tier 2 Deliverables (beyond the scope of this local guidance).....	16
7	Consultation	17
8	Schedule.....	17
9	Appendix A - Clean Water Act References to threats	19
10	Appendix B – Significant Threats Data Requirements.....	27

1.1 List of Tables

Table 1	Current projects involving threats and risk assessment.....	6
Table 2	Local Description of Deliverables related to threats	13
Table 3	Schedule.....	18
Table 4	Technical Rules (dated Dec. 12, 2008) references to threats.....	19
Table 5	O. Reg. 287/07 (General) references to threats	23
Table 6	Clean Water Act (2006) references to threats.....	26

2 Introduction

The Clean Water Act (2006) requires the completion of an Assessment Report and a Source Protection Plan. The Assessment Report is to contain the science behind the plan including:

- delineation of the vulnerable areas,
- assessment of the vulnerability of those areas,
- identification and assessment of drinking water quality issues,
- identification of conditions which may affect drinking water sources,
- identification of threats to drinking water sources,
- assessment of risks to the drinking water sources posed by activities within those vulnerable areas.

The Source Protection Plan is then developed by the Source Protection Committee to reduce the risks that those activities pose to the drinking water sources. The Clean Water Act requires that the Source Protection Committee develop a Terms of Reference which identifies the tasks to complete both the Assessment Report and the Source Protection Plan. This local guidance is intended, along with provincial rules, regulations and the Clean Water Act, to define the deliverables related to Threats and Risk Assessment tasks identified in the Terms of Reference.

This local guidance focuses on the threats and risk assessment portions of the assessment report. It is intended to give clarification and local interpretation of the sections in the Clean Water Act, its regulations and the associated technical rules pertaining to the threats and risk assessment. It must be read in conjunction with the Clean Water Act, its regulations and rules. References to some of those rules on which this local guidance is based are provided within the appendix to this local guidance.

This local guidance is intended to guide the current studies being undertaken by consultants, municipalities and conservation authorities. It will allow those undertaking the work to refine their work plans or develop supplemental work plans and to complete the tasks and deliverables identified in this local guidance. It is not intended to be a comprehensive outline of the work required to satisfy the requirements of the Act, regulations and rules, but must be read in conjunction with the provincial requirements.

This local guidance will allow the current work to proceed to a consistent conclusion so that material can be compiled into the first Assessment Report. In some cases additional work will be required through these studies. An example of this additional work would be site specific investigations to determine the circumstances associated with activities identified as threats.

3 Background

- Ministry Of Environment (MOE) funded municipalities and Conservation Authorities (CAs) to undertake technical studies
- These studies were initially based on agreements and later based on interim MOE source protection guidance.
- The work did not include detailed site specific inventories but instead relied upon desktop analysis of activities with the vulnerable areas and where necessary included drive-by inventories
- The inventories collected through this work included various levels of detail (in some studies the general activity was captured while not differentiating between specific activities such as various types of professional offices or farming)
- Most of the inventories were based on NAICS (North American Industry Classification System) codes as it was generally accepted that future risk assessment would be facilitated through provincial linking of the NAICS code to a hazard score
- The work which was initiated through these studies was intended to be a detailed inventory of activities which could be considered a threat within the entire WHPA or IPZ. At the point that the inventories were initiated there was no guidance available on the level of hazard which might constitute a threat nor was there a list of the activities which could be considered a threat.
- Subsequent to the initiation of these studies the CWA requirements, through regulations and rules, were developed. Specifically a list of prescribed threats was released as well as a table indicating the level of risk posed by an activity being undertaken under certain circumstances. This was different than the anticipated list of hazard ratings for a given NAICS code which was needed to assess the risks posed by the land uses identified in the inventories being developed.
- Although the inventories being developed through the initial studies will be useful in the risk assessment defined in this local guidance they were not developed with the needs now established through the regulations and rules.
- There are other challenges with adopting those inventories for use in this work such as the wide variation in the format and structure of the databases as well as the level of detail which was captured through the inventories.
- The rules now require lists of activities that are or would be threats. Inventories of existing activities are not required to develop these lists due to the requirement to identify what would be a threat if it were to be undertaken. Further, it is not necessary to distinguish whether an activity is currently undertaken from those that would be threats if they were to be undertaken, as a policy will need to be in place to manage the risk. Specifically, policies will be required to prevent activities from becoming a significant risk should such an activity be undertaken in the future. This is a significant departure from the methodology initiated based on interim guidance.
- The inventories will be useful in assisting the SPC to develop policies in that those policies may be significantly different if an activity is being undertaken than if it is not. For example it may be more likely to prohibit future activities than ones which are already in existence

- Assessment Reports also need to include a number of maps including significant drinking water threats
- Maps are needed which indicate where activities associated with chemicals, DNAPLs and pathogens pose significant. As the areas for each type of risk are different and overlap it may be necessary to map these areas on different maps.
- Similar maps are required for areas where activities associated with chemicals, DNAPLs and pathogens pose moderate risks as well as maps where those activities pose low risks. Ways of combining these maps with the maps of significant should be considered.
- These maps will all rely upon the vulnerability maps which have been created through previous work on these projects

4 Purpose and Objectives

This local guidance is intended to provide direction and guidance to consultants engaged in studies for the conservation authorities. It is recommended that municipalities working on similar projects utilize this local guidance in undertaking their projects, as ultimately their deliverables will be assembled into the Assessment Report with the other projects guided by this local guidance. This local guidance is intended to describe the minimum requirements to be included in the AR. There are also other aspects of the work related to threats and risk assessment which will be needed to inform and implement the Source Protection Plan (SPP).

The objectives of work described in this local guidance are:

1. to identify the number and types of significant risks,
2. to describe the lists and maps required by the Clean Water Act (and its regulations and rules)
3. to satisfy the requirements of the Clean Water Act, related rules and regulations as they pertain to water quality threats and risk assessment,
4. to provide information useful in developing policies to reduce risks to drinking water sources,
5. to provide information which will be beneficial when implementing the SPP

Although all of these objectives should be kept in mind, the focus of this local guidance is currently on satisfying the requirements of the first Assessment Report (numbers 1, 2 and 3 above) related to threats and risk assessment. The remaining objectives will be the focus of the second tier of this local guidance, described in Sections 5.3, 5.4 and 5.7, but currently beyond the scope of this local guidance.

5 Discussion

5.1 Studies

Threats and risk assessment work is being carried out through various technical studies. These studies are being lead by municipalities or CAs within the source protection region.

They were initiated through agreements with MOE. The work was defined within the agreement and later based on draft guidance modules provided as interim guidance. Those agreements still require the delivery of specific deliverables including threats inventories. These studies are currently being updated to meet the technical rules. This local guidance is focused on the minimum requirements related to threats and risk assessment required to meet those rules and focused on receiving those deliverables in time to meet legislated requirements rather than awaiting the completion of the other aspects of the studies (such as the threats inventories) which can be completed later. Much work has been undertaken on updating the other aspect of the technical work to meet those rules.

Table 1 Current projects involving threats and risk assessment

Ground-water Systems		Surface Water Systems	
Projects		Projects	
Perth	Stratford St Marys West Perth -Mitchell Perth East -Shakespeare (& Milverton)* Perth South - St Pauls, Sebringville*	Essex - Chatham Kent	Wallaceburg Wheatley South Chatham Kent/Chatham
London- Middlesex	City of London - Fanshawe, Hyde Park Thames Centre - Thorndale, Dorchester Kilworth Heights Subdivision, Melrose, Mount Brydges, Birr	West Elgin	West Elgin
Oxford	Woodstock, Innerkip, Ingersoll, Beachville-Loweville, Mount Elgin*, Embros, Lakeside*, Thamesford, Tavistock, Hickson-King*	Southern Lake Huron	LAWSS* Petrolia*
Chatham- Kent	Ridgetown Highgate		

Municipalities identified with an asterisk (*) include vulnerable areas from water systems in neighbouring municipalities
 Note: Milverton is outside of the TSR SP Region but included in the technical study

5.2 Threats Inventories

County groundwater studies developed lists of potential threats within WHPA. They relied largely on professional judgment of the individuals undertaking the studies to identify land uses that could pose a risk to drinking water sources. This has resulted in significant variation in the detail and nature of the inventories. Source Protection technical studies improved those inventories where they existed before and initiated inventories where none existed before (surface water sources). These inventories were based on general land use categories or more specific categories as listed under the NAICS (North American Industry Classification System) classifications. Further information on the NAICS codes may be obtained at: <http://www.statcan.gc.ca/subjects-sujets/standard-norme/naics-scian/2002/naics-scian-02index-eng.htm>

Previous methodologies and guidance suggested that:

- a detailed parcel by parcel inventory was needed of all activities which might pose a threat to drinking water sources
- the activity would be described by a NAICS code

- each activity would need to be assessed to determine the hazard rating and multiplied by the vulnerability of the area where the activity was occurring
- the province would provide hazard scores related to the NAICS
- a database and look-up tables would be provided to facilitate this work

Since the studies were initiated the prescribed list of activities and the table of threats and circumstances under which they are considered threats have been released. The rules require a different approach where:

- a threat is an activity that occurs *or could occur* in an area
- the table of threats includes detailed descriptions of circumstances and identifies the level of risk (significant, moderate or low) depending on the type of vulnerable area and vulnerability score of a part of the vulnerable area in which the activity is being engaged
- the table includes the risk score of the activity based on the vulnerability zone and score in which the activity is being undertaken.
- the rules only require the number of significant threats to be counted in each vulnerable area.

This allows the inventory to be scoped and focus on:

- those areas where a significant risk could occur (with a vulnerability score of 8 or greater for chemical threats, WHPA-A and B, IPZ-1 and 2 for pathogens and WHPA-A, B and C for DNAPLs)
- the activities within those areas which could be significant

Threats inventories being developed and refined may be utilized if they are detailed enough and organized in such a fashion as to allow them to be compared or linked to the table of threats. The detailed circumstances are difficult to relate to the categories of NAICS codes. Although some links have been provided by the province along with the other look-up tables, this requires significant work to make links between the inventory and the table of activities and circumstances. In most cases additional information would be required to determine the appropriate circumstances under which the activity is being undertaken. Further, the list of NAICS codes and activities is not considered to be complete. These threats inventories will be important for the development of policies and in the implementation of the Source Protection Plan however they may not be the most efficient way to develop the required lists or count the number of locations where significant risks are occurring. Even if these lists are not used to determine the significant risks it will be important that they be completed and delivered to the conservation authorities as part of tier 2 of the work described in this local guidance. A more efficient methodology is described in this local guidance for completing the required deliverables in time for the submission of the Assessment Report.

In many cases the areas where a significant risk could occur is relatively small. Further, depending on the vulnerability score in those areas, the types of activities which need to be assessed to determine whether they are significant are limited. This list may include activities which were not captured in the originating inventories. Similarly, many activities

included in those inventories would not pose a significant risk in that location or perhaps even at locations with a lower vulnerability score.

Even if not utilized for this work it will be important that the inventories of threats be refined as they will be useful for other purposes. However, it may not be the most efficient way of satisfying the requirements of the rules and providing the required content for the Assessment Report. Scoped inventories with a focus on the deliverables identified below may be a more efficient way to collect and report on the information. This local guidance is intended to better describe the required outputs, rather than to define the methodology for creating those outputs.

5.3 WHPA-E and F for GUDI Systems (beyond the scope of this local guidance)

Drinking water systems which have been determined to be Groundwater Under Direct Influence (GUDI) of surface water have additional vulnerable areas which must be defined. A WHPA-E must be defined if the surface influence has the potential for "short circuiting" the travel times established through the delineation of WHPA-B, C and D. A WHPA-F is also to be delineated where the system has issues which are not dealt with through WHPA-A, B, C, D and E.

Most of these areas have yet to be delineated and assessed for vulnerability. As a result the work associated with threats and risk assessment in those areas is beyond the scope of this local guidance. The methodologies described in this local guidance will be applied to those areas upon completion of the delineation and vulnerability scoring of those areas.

5.4 Threats contributing to Issues (beyond the scope of this local guidance)

The rules require threats contributing to issues to be identified. The rules also allow for that work to be undertaken later if a work plan is included which identifies how and when that work will be completed. This is due to the significant effort and data which may be required to refine and substantiate the "issues contributing area".

In this region issues assessment on municipal water sources is currently underway. Until the issues assessment has been completed, identifying the threats contributing to the issues cannot be undertaken. It is expected that, in most cases, the issues assessment will identify a work plan for investigating the area and threats contributing to the issues, but will not actually be able to identify specific threats contributing to issues.

Threats contributing to issues are therefore not currently a part of this local guidance. In the future, however, it will be necessary to include, in the lists of threats, the threats which are tied to issues. This is important as threats associated with issues are significant and will therefore need to be added to the count of significant threats.

5.5 Conditions (beyond the scope of this local guidance)

Conditions are the result of past activities. Technical Rule 126 describes the types of things which can be considered Conditions.

MOE has indicated that a condition cannot be the result of an activity which is still occurring. This is most likely a result of the fact that there are existing regulatory methods for dealing with these situations. However, if a material is found in a concentration and manner that would be considered a condition then it needs to be documented so that the SPC and MOE can consider the situation.

Although inventorying conditions is beyond the scope of this work and will be considered through separate local guidance, the following is provided in case a situation is identified through the work described in this local guidance.

- The situation needs to be considered to determine if it may be considered an imminent risk to the drinking water system. The operating authority, conservation authority and MOE need to be involved considering the situation.
- Where the potential condition is attributed to an existing activity, the activity should be assessed as a threat.
- Where the circumstances associated with the activity do not adequately describe the situation the unique circumstances surrounding this situation need to be considered and an appropriate hazard score is to be developed using the method described in the rules.
- The criteria for defining conditions may be used as a comparison.

As work associated with conditions is beyond the scope of this local guidance, therefore no allowance is required for this work. Should the situation above be identified a work plan will be developed with the consultant to deal with the situation.

5.6 Activities that are not included in the prescribed list

Rule 119 (see Table 4 in Appendix A) allows the SPC to identify activities which are not on the prescribed list and which pose a risk to a drinking water source. The SPC is also able to identify circumstances not in the list with an activity. In order to identify an activity in this manner the committee (or actually the consultant on their behalf) must calculate the hazard related to the activity in the same manner as the hazards associated with the prescribed activities in the table of threats. The Director must agree with the calculations.

The consultant is to identify if there are any activities which the operating authority is concerned about. The consultant will investigate to determine if the activity is included in the prescribed lists. If it is not included in the prescribed lists or if the circumstances under which the activity is being undertaken are different than those described in the table of drinking water threats, such activities will be listed separate from the prescribed activities considered threats.

Further, through their review of activities occurring in the vulnerable areas, the consultant may identify activities being undertaken in the area which they think may pose a risk to the drinking water system, but which they cannot associate with the prescribed threats. The consultant shall consider activities which are similar in nature to those identified in the prescribed list, activities which involve similar chemicals to those listed, and circumstances which are not included in the prescribed list.

One such activity that the SPC has expressed a concern over is transportation corridors such as pipelines. Known major transportation corridors are to be identified and mapped within the vulnerable areas. The chemicals of concern identified in the threats tables are to be reviewed to determine the most hazardous material (highest hazard score) which may be transported along the corridor within the vulnerable area. This chemical is to be used to assess the risk score.

Activities which are identified in this manner will need to be evaluated to determine the hazard score for the activity. Where the methodologies described above are not able to allow the threat to be assessed the consultant is to provide suggestions as to similar activities or circumstances which could be relied upon in determining the hazard associated with the activity of concern. Doing a detailed analysis of the risk associated with these activities is beyond the scope of this local guidance and will need to be identified through a specific work plan should this situation arise.

The consultant shall also document activities which the operating authority is concerned about which are occurring beyond the vulnerable area. This may be useful in delineation of IPZ-3 and GUDI-F (for a GUDI system) where applicable. There is however no similar methodology for the extension of a vulnerable zone to include activities beyond WHPA-D for non-GUDI systems.

5.7 Future threats

Activities which are or "would be" threats are to be included in the required lists. Generally this is addressed by including all activities listed in the prescribed lists even if they are not being engaged in an areas. Activities not currently being undertaken in the vulnerable areas "would be" threats if the activity was to be undertaken in the vulnerable area in the future. This greatly simplifies the process of identifying the activities which are or would be threats as the lists provide that information. Filtering and sorting of the lists will provide for a list which can be utilized for local consultation on the threats and risks. However, this is considerably more challenging when counting the number of locations at which significant risks are occurring.

O. Reg. 287/07 s13(1)6i requires that we identify the number of locations at which a person is engaging in an activity which is a significant threat. It also includes counting locations where the activity "would be" a *significant* drinking water threat. It is very difficult and in many cases impossible to identify the circumstances associated with a future activity, especially based only on land use identified in Official Plans and bylaws. The circumstances are critical in identifying whether an activity would be significant or not. It is therefore apparent that this was not the intent of the rules. Therefore a different

interpretation of "would be" is required in identifying if future activity should be included in the count of significant threats. MOE has indicated that in this case **"would be" should be interpreted as having the infrastructure in place to undertake the activity** which would be a significant drinking water threat.

As an example, if the structure is in place to house or store the quantity which would make the activity a significant risk, but it is not in use or houses a lower quantity, then this location is to be included as "would be" even although at that location the circumstances are not in place (ie there is not sufficient quantity) to make this a significant risk at this time. An empty fuel tank or chemical storage would be an example of this. The level of risk would be established based on the quantity which could be stored rather than based on the amount which is there at the current time. This is obvious for certain activities as the risk should not be calculated based on the half empty storage tanks at the time of assessment, when they will likely be filled at the time of the next delivery. A barn which is currently empty or houses far fewer livestock than it could house would be another example. Similarly it does not make sense to assess the risk based on an empty chicken barn when the barn could be filled up days or weeks later. This does present significant challenges when the intended activity is less obvious. Empty warehouses or other commercial buildings will require considerable judgment to be exercised in assessing the future risks associated with this activity. Reasonable assumptions will be needed. These assumptions must be documented. These assumptions should be conservative but reasonable. These types of situations will need to be dealt with on a case by case basis and will likely need to be considered through the tier 2 threats and risk assessment described below.

It is likely that in the first tier of threats and risk assessment those areas with the infrastructure in place to undertake an activity which would be a drinking water threat will be assumed to be engaged in that activity. It would only be through direct contact with the person engaged in the activity that we would be able to determine whether or not the activity is currently being engaged in. Through the subsequent tiers, an assessment of whether the activity should be classified as a future threat will need to be made, but at this stage it should be counted as a location where the activity is or would be a significant risk.

5.8 Event Based Significant Threats (beyond the scope of this local guidance)

Rule 130 of the Technical Rules: Assessment Report (Dec 2008) identifies a activity threat as significant if modeling demonstrates that a release of a chemical parameter or pathogen from the activity would be transported to the intake and result in the deterioration of the water for use as a source of drinking water. Currently rule 130 restricts this methodology for identifying a significant risk to IPZ-3, however we understand that MOE is considering amending the rules to allow that same event based modeling to identify significant threats in the other intake protection zones. The work to undertake this event and activity specific modeling is beyond the scope of this local guidance.

6 Deliverables

The Clean Water Act, General Regulation (O. Reg. 287/07) and Technical Rules all make reference to deliverables required in the Assessment Report. Appendix A includes a table of those references. The previous guidance referred to a tier 1 and tier 2 risk assessment where tier 2 involved site investigation and discussions with landowners. Threats and Risk Assessment in most studies in the Thames-Sydenham and Region will require a similar 2 tiered approach where the first tier is based on existing inventories, desktop investigations or windshield surveys. Tier 1 of the Threats and Risk Assessment must be completed in time for Assessment Report Consultation - Phase 2 (October 2009). Where time permits more detailed investigation can be undertaken in tier 1, however in most cases the detailed, site specific investigation will not be able to be completed within tier 1.

6.1 Tier 1 Deliverables

The deliverables required are described in the following table. It is important to note that most of the deliverables do not rely upon a threats inventory in any way. The only exception to this is the enumeration of significant threats. Even this enumeration requires a scoped inventory only.

The scoped inventory is focused on the areas where a threat can pose a significant risk- where the vulnerability score is 8 or higher. Significant Risks can also be from threats which contributes to an issue or are identified through event specific modeling, both of which are beyond the scope of this project (although any threats contributing to an issue, that have been identified through other work, can be brought forward to this work and included in the lists).

While the Act, Regulations and rules identify the deliverables, the following table is intended to provide a local interpretation of how those deliverables may be satisfied. These deliverables are to be based on best available information through desktop exercises relying on existing threats inventories and where necessary or more efficient, windshield surveys. Where there is uncertainty, reasonable, but conservative assumptions are to be made. These assumptions may include what activity is being undertaken or specifics on the circumstances associated with the activity. These assumptions and the level of uncertainty also need to be documented.

The following table considers water quality threats only. Water Quantity threats and the vulnerable areas associated with water quantity are being considered through the Water Budget process and are therefore beyond the scope of this local guidance.

The focus of this local guidance is on the WHPAs and IPZs and the projects associated with these areas being undertaken by consultants and municipalities. Similar methodologies will be applied to the water quality threats associated with HVAs and SGRAs, but not as part of the work currently being undertaken through these technical studies.

Table 2 Local Description of Deliverables related to threats

#	Deliverable	Reference	Description
1.	List of Significant Threats	TR 9 (1)(d), OReg 287/07 s13(1)(3)	<ul style="list-style-type: none"> List by prescribed activity for each vulnerability score within the vulnerable areas (WHPA, IPZ) in the study Include the circumstances under which the prescribed activity is considered a significant threat Include any local circumstances (which were not identified in the above point) under which the prescribed activity is considered a significant threat Table, text
2.	Map of areas where pathogen activities can be significant	CWA s15 (2) (h)	<ul style="list-style-type: none"> In the Assessment Report maps do not need to be separated out for each of significant, moderate, low and pathogen, DNAPL and chemical, but for the purposes of clarity and consultants submission each combination is to be mapped separately. Suggestions as to ways to map these collectively would be appreciated. The SPC will consider more efficient mapping methodologies in the Assessment Report Clean Water Act Mapping Symbology (April 2009) and data standards to be met Maps, text (explain in text the interpretation of the map of vulnerability scores and table of circumstances together that give the areas where activities are significant, moderate or low)
3.	Map of areas where DNAPL activities can be significant	CWA s15 (2) (h)	
4.	Map of areas where chemical activities can be significant	CWA s15 (2) (h)	
5.	List of Moderate Threats	OReg 287/07 s13(1)(4)	<ul style="list-style-type: none"> List by prescribed activity for each vulnerability score within the vulnerable areas (WHPA, IPZ) in the study Include the circumstances under which the prescribed activity is considered a moderate threat Include any local circumstances (which were not identified in the above point) under which the prescribed activity is considered a moderate threat Table, text
6.	Map of areas where pathogen activities can be moderate	OReg287 s13(1)2(i)	<ul style="list-style-type: none"> As per deliverables 2-4 above
7.	Map of areas where DNAPL activities can be moderate	OReg287 s13(1)2(i)	

#	Deliverable	Reference	Description
8.	Map of areas where chemical activities can be moderate	OReg287 s13(1)2(i)	
9.	List of Low Threats	OReg 287/07 s13(1)(5)	<ul style="list-style-type: none"> List by prescribed activity for each vulnerability score within the vulnerable areas (WHPA, IPZ) in the study Include the circumstances under which the prescribed activity is considered a low threat Include any local circumstances (which were not identified in the above point) under which the prescribed activity is considered a low threat Table, text
10.	Map of areas where pathogen activities can be low	OReg287 s13(1)2(ii)	<ul style="list-style-type: none"> As per deliverables 2-4 above
11.	Map of areas where DNAPL activities can be low	OReg287 s13(1)2(ii)	
12.	Map of areas where chemical activities can be low	OReg287 s13(1)2(ii)	
13.	Local threats (other Activities) that are or would be drinking water threats	CWA s15(2)(g)(i), TR 7(3), 119-125, OReg 287/07 s13(1)(3), 13(1)(4), 13(1)(5)	<ul style="list-style-type: none"> To be brought to the attention of the SPC for consideration as a drinking water threat Consider any concern of the treatment plant operating authority Consider any threat identified by the public through consultation on Assessment Report (information to be provided by CA following Phase 1 and 2 consultation sessions) Include a recommendation as to how to determine hazard rating (consider similar activities or activities with similar chemical, pathogen or DNAPL circumstances) Hazard rating approved by Director must be listed for each local threat Must be listed separately from the prescribed activities (No. 1,5,9) List local circumstances for activities that are significant, moderate or low drinking water threats Table, text

#	Deliverable	Reference	Description
14.	Activities considered linked to issues	TR 115(4)	<ul style="list-style-type: none"> This is a cross reference to the work undertaken through Issues Evaluation, the work is to be undertaken through that project, any issues based threats identified through that process can be brought forward to this project to complete the list of threats if they are available
15.	Number of Locations where Significant Threats occur	OReg 287 Sec 13 (1) 6(i) TR 9(1)(e)	<ul style="list-style-type: none"> This is to be the total number of locations at which an activity which is a significant threat is being engaged in within the WHPA or IPZ. For the purposes of this count a location will be defined as a property parcel. Where multiple occurrences of an activity are identified on the same parcel it is generally only to be counted once (except as noted in the following point). Where this the case the cumulative effect of the occurrences are to be considered (ie the volumes are to be summed) in evaluating the risk associated with that activity at that location Where multiple tenants are know to occupy the same property parcel and are involved with the same activity they shall each be included in the count. Roads and other corridors are to be counted as a single location Summarized as per the 19 prescribed activities under OReg 287/07 s 1.1(1) which are prescribed drinking water threats related to water quality The details associated with the activities counted are to be recorded as per deliverable 16 below. Table, text
16.	Details on locations of significant threats	Information for SPC and project team	<ul style="list-style-type: none"> Details on the locations where significant threats exist are to be submitted in a database and not to be included in the technical memo (deliverable 18) Data to be included with this deliverable will be defined in Appendix B. This information will allow the total to be recalculated when updated information is available as well as providing the staff and the SCP with a better understanding of the total

#	Deliverable	Reference	Description
17.	List of prescribed Activities that are or would be drinking water threats for each vulnerable area	CWA s15(2)(g)(i) TR 7(3), 118, OReg 287/07 s1.1	<ul style="list-style-type: none"> As per Technical Rule 118 these may be collectively listed in the assessment report as "<i>the activities prescribed to be drinking water threats in paragraphs 1 through 18 and paragraph 21 of subsection 1.1(1) of O. Reg. 287/07 (General)</i>" The above statement when combined with the lists of activities which are significant, moderate and low should satisfy this requirement, thus no separate deliverable is required as part of the technical studies.
18.	Technical memorandum	Information to SPC	<ul style="list-style-type: none"> to inform Assessment Report compilation description of the method of calculations and the general nature of assumptions shall be included in the technical memorandum to include specific description of work but may refer to this local guidance for general description

6.2 Tier 2 Deliverables (beyond the scope of this local guidance)

Deliverables completed in tier 1 will likely need to be refined through site specific investigation. Where an activity was identified as a significant risk, contact with the person engaged in the activity will occur through the Assessment Report Consultation (phase 3). This personal contact may result in refinement of assumptions made through the tier 1 Threats and Risk Assessment and may well eliminate activities from being identified as significant or in some cases from being identified as threats. As a result deliverables 15 and 16 above will be refined in tier 2. Although beyond the scope of this local guidance the following will be required in the tier 2 Threats and Risk Assessment:

- Threats inventories initiated through previous tiers of this work will be finalized and delivered to the municipality and SPA.
- These threats inventories are to satisfy the data standards developed by the MOE and/or the SPA
- It is proposed that the survey or census that was developed by the Regional Municipality of Waterloo and is being applied in the Lake Erie Source Protection Region would be used to ascertain the circumstances around the activities which are being undertaken in the vulnerable areas where a significant risk is possible.
- The work associated with this tier of the project is currently beyond the scope of this local guidance. This will be refined when final guidance and database are received from the MOE.

7 Consultation

The Thames-Sydenham and Region Source Protection Committee has adopted a staged consultation plan for the Assessment Report which goes beyond the regulatory requirements.

- Phase 1 focuses local consultation on the vulnerable areas.
- Phase 2 is again a locally focused consultation adding issues and an overview of threats and risk assessment.
- Phase 3 is a regionally focused consultation on the draft proposed Assessment Report.

Output from the technical studies is required for phase 2 consultation. It is, however, expected that in areas where there may be higher numbers of risks or a great deal of uncertainty related to the circumstances associated with the activities, that more work will be undertaken beyond phase 2 consultation and perhaps beyond the submission of the first assessment report in April 2010.

The consultants' participation in consultation is not required. Results from the consultation may however be brought to the attention of the consultants for consideration in finalizing their submissions.

For more details on the consultation phases please refer to the Assessment Report Consultation Plan.

8 Schedule

The Assessment Reports in the Thames-Sydenham and Region are required to be submitted by April 20, 2010. It is generally accepted that the Assessment Reports will not be complete at that time, however, they will be submitted with data gaps identified. Work will continue on filling those gaps while work on the Source Protection Plan is initiated. An addendum will be submitted which addresses those data gaps, where possible. The schedule for the submission of the addendum has not yet been determined. The addendum needs to be submitted in sufficient time to allow for its approval prior to and allow sufficient time for the submission of a complete Source Protection Plan by its legislated due date of August 20, 2012 (5 years from the appointment of the chair of the Thames-Sydenham and Region Source Protection Committee).

The addendum may include, among other things, an update of Threats and Risk Assessment based on a more detailed inventory of existing threats and circumstances (referred to in past provincial guidance and in this local guidance as Tier 2 Risk Assessment). The Assessment Report submitted in April 2010 must include the deliverables identified in section 6.1 above (Table 2). Prior to submission of the Assessment Report the stakeholders in the region must be consulted. This consultation will be undertaken by the Conservation Authorities as part of the consultation identified in the Source Protection Committee's Assessment Report Consultation Plan. As such the consultant will not be required to participate in the consultation as part of the work

described in this local guidance. Where the specific expertise of the consultant is required their involvement will be arranged for separately, outside of the work described in this local guidance.

The phased approach to consultation, as described in Section 7 above, has been adopted by the Source Protection Committee. The deliverables identified in Table 2 must be completed to allow for consultation in Phase 2 of the Assessment Report Consultation as this is the last local consultation of the components of the Assessment Report.

It is therefore necessary to have completed the work contained in this local guidance by October 23, 2009. The following table outlines the schedule for the completion of this work.

Table 3 Schedule

	Task/Milestone	Description	Date Due
1.	Comments on ToR	<ul style="list-style-type: none"> This ToR is to be distributed to that consultants engaged in these projects and technical steering committees Consultant and municipal comment will be considered along with comments received from the SPC 	Aug 14, 2009
2.	Final local guidance	<ul style="list-style-type: none"> Local guidance will be finalized and redistributed to consultants for proposals 	Sept 8, 2009
3.	Proposals Due	<ul style="list-style-type: none"> Proposals to be brief letter form proposal requesting extension of existing work plan to include this work Proposals to include a cost of undertaking the work and a confirmation of schedule 	Sept 16 2009
4.	Draft Tier 1 Report	<ul style="list-style-type: none"> Technical memorandum including required lists and maps as per deliverables identified in table 2 	Oct 5, 2009
5.	Final Tier 1 Report	<ul style="list-style-type: none"> Final report considering comments of technical steering committee 	Oct 23, 2009
6.	Tier 2 (beyond the scope of this ToR)	<ul style="list-style-type: none"> To follow consultation on preliminary Assessment Report Timing to align with addendum to Assessment Report 	To be determined (summer/fall 2010)

9 Appendix A - Clean Water Act References to threats

This appendix includes excerpts from the Act, Regulations and Rules which are intended to provide a quick reference for the reader. It is important, however, that the current official version of the regulatory material should be referred to when interpreting the requirements related to the deliverables identified in this local guidance. The excerpts included below are based on:

Clean Water Act, 2006
 Clean Water Act Ontario Regulation 287/07
 Clean Water Act Technical Rules, December 12, 2008
 MOE Guidance Modules, October 2006
 Thames-Sydenham and Region Assessment Report Consultation Plan, July 29 2009

Table 4 Technical Rules (dated Dec. 12, 2008) references to threats

Rule/Section	Sub Title	Content	References within this Rule/Section
Part I. Rule 9. Sub rule 1. Sub sections (d), (e). On Page 9	Minimum information in the Assessment Report	Rule 9. An assessment report shall include the following: (1) One or more maps, graphics or tables detailing, (d) activities that are or would be and conditions resulting from past activities that are drinking water threats and their respective hazard rating if one is required to be determined in accordance with rule 120, 121 or 139; (e) the number of locations at which an activity that is a significant drinking water threat is being engaged in; and	Rule 120. The chemical hazard rating of an activity that is not prescribed to be a drinking water threat under O. Reg. 287/07 (General) shall be a rating that in the opinion of the Director reflects the hazard..... Rule 121. The pathogen hazard rating of an activity that is not prescribed to be a drinking water threat under O. Reg. 287/07 (General) shall be a rating that in the opinion of the Director reflects the hazard..... Rule 139. For the purpose of rule 138, the hazard rating of a condition that results from a past activity is 10. Rule 138. The risk score of an area in respect of a condition that results from a past activity shall be calculated.....
Part XI. Rule 118. On Page 52	Activities prescribed to be drinking water threats	Rule 118. The activities prescribed to be drinking water threats for a vulnerable area in paragraphs 1 through 18 and paragraph 21 of subsection 1.1(1) of O. Reg. 287/07 (General) may be collectively listed in the assessment report as “the activities prescribed to be drinking water threats in paragraphs 1 through 18 and paragraph 21 of subsection 1.1(1) of O. Reg. 287/07 (General)”.	O. Reg. 287/07 (General), Subsection 1.1(1), Paragraphs 1 through 18 and paragraph 21-list of threats excluding quantity threats. (see next table)
Part XI.	Other Activities	Rule 119. In addition to activities prescribed to be drinking	O. Reg. 287/07 (General), Subsection 1.1(1),

<p>Rule 119. On page 52</p>		<p>water threats in paragraphs 1 through 18 and paragraph 21 of subsection 1.1(1) of O. Reg. 287/07 (General), an activity shall be listed as a drinking water threat for a vulnerable area if,</p> <p>(1) the activity has been identified by the source protection committee as an activity that may be a drinking water threat;</p> <p>(2) in the opinion of the Director, (a) the chemical hazard rating of the activity is greater than 4, or (b) the pathogen hazard rating of the activity is greater than 4; and</p> <p>(3) the risk score for an area within the vulnerable area in respect of the activity calculated in accordance with rule 122 is greater than 40.</p>	<p>Paragraphs 1 through 18 and paragraph 21 (see next table)</p> <p>Rule 122. The risk score of an area within a vulnerable area in respect of an activity that is not listed in the Tables of Drinking Water Threats shall be calculated in accordance with the following formula:</p> <p>A x B</p> <p>where,</p> <p>A = the chemical hazard rating or pathogen hazard rating of the activity determined in accordance with 120 or 121 as the case may be; and</p> <p>B = the vulnerability of the score of the area within the vulnerable area determined in accordance with Part VII or Part VIII, as the case may be.</p>
<p>Rule 126</p>	<p>Conditions</p>	<p>Listing Conditions that result from past activities</p> <p>126. Without limiting the generality of subclause 15(2)(g)(ii) of the Act, the list of conditions that are drinking water threats prepared for the purpose of subclause 15(2)(g)(ii) of the Act shall include each of the following conditions that exist in a vulnerable area and that result from a past activity:</p> <p>(1) the presence of a non-aqueous phase liquid in groundwater in a highly vulnerable aquifer, significant groundwater recharge area or wellhead protection area;</p> <p>(2) the presence of a single mass of more than 100 litres of one or more dense non-aqueous phase liquids in surface water in a surface water intake protection zone</p> <p>(3) the presence of a contaminant in groundwater in a highly vulnerable aquifer, significant groundwater recharge area or a wellhead protection area, if the contaminant is listed in Table 2 of the Soil, Ground Water and Sediment Standards and is present at a concentration that exceeds the potable groundwater standard set out for the contaminant in that Table;</p> <p>(4) the presence of a contaminant in surface soil in a</p>	<p>15(2)(g)(ii)</p>

		<p>surface water intake protection zone if, the contaminant is listed in Table 4 of the Soil, Ground Water and Sediment Standards is present at a concentration that exceeds the surface soil standard for industrial/commercial/community property use set out for the contaminant in that Table; and</p> <p>(5) the presence of a contaminant in sediment, if the contaminant is listed in Table 1 of the Soil, Ground Water and Sediment Standards and is present at a concentration that exceeds the sediment standard set out for the contaminant in that Table</p>	
Rule 130	Event Based Activity in IPZ-3	<p>130. An activity listed as a drinking water threat in accordance with rule 118 or 119 is a significant drinking water threat in an IPZ-3 delineated in accordance with rule 68 at the location where the activity is carried on if modeling demonstrates that a release of a chemical parameter or pathogen from the activity would be transported through the surface water intake protection zone to the intake and result in the deterioration of the water for use as a source of drinking water for the intake.</p>	<p>Rule 118. The activities prescribed to be drinking water threats for a vulnerable area in paragraphs 1 through 18 and paragraph 21 of subsection 1.1(1) of O. Reg. 287/07 (General) may be collectively listed in the assessment report as “the activities prescribed to be drinking water threats in paragraphs 1 through 18 and paragraph 21 of subsection 1.1(1) of O. Reg. 287/07 (General)”.</p> <p>Rule 119. In addition to activities prescribed to be drinking water threats in paragraphs 1 through 18 and paragraph 21 of subsection 1.1(1) of O. Reg. 287/07 (General), an activity shall be listed as a drinking water threat for a vulnerable area if,</p> <p>(1) the activity has been identified by the source protection committee as an activity that may be a drinking water threat;</p> <p>(2) in the opinion of the Director, (a) the chemical hazard rating of the activity is greater than 4, or (b) the pathogen hazard rating of the activity is greater than 4; and</p> <p>(3) the risk score for an area within the vulnerable area in respect of the activity calculated in accordance with rule 122 is greater than 40.</p> <p>Rule 68. An area known as IPZ-3 shall be delineated for each type A and type B surface water intake and each type C and type D surface water intake located in Lake Nippising, Lake Simcoe, Lake St. Clair or the Ottawa River, associated with a drinking water</p>

			<p>system described in rule 58 and shall be composed of the following areas:</p> <ul style="list-style-type: none">(1) Subject to rule 69, the area within each surface water body through which, modeling demonstrates, contaminants released during an extreme event may be transported to the intake;(2) where the area delineated in accordance with subrule (1) abuts land,<ul style="list-style-type: none">(a) a setback of not more than 120 metres inland along the abutted land measured from the high water mark of the surface water body that encompasses the area where overland flow drains into the surface water body; and(b) the area of the Regulation Limit along the abutted land.
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Table 5 O. Reg. 287/07 (General) references to threats

Section	Sub Title	Content	References within this Rule/Section
Section 1.1 (1)	Prescribed drinking water threats	1.1 (1) The following activities are prescribed as drinking water threats for the purpose of the definition of “drinking water threat” in subsection 2 (1) of the Act: <ol style="list-style-type: none"> 1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act. 2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage. 3. The application of agricultural source material to land. 4. The storage of agricultural source material. 5. The management of agricultural source material. 6. The application of non-agricultural source material to land. 7. The handling and storage of non-agricultural source material. 8. The application of commercial fertilizer to land. 9. The handling and storage of commercial fertilizer. 10. The application of pesticide to land. 11. The handling and storage of pesticide. 12. The application of road salt. 13. The handling and storage of road salt. 14. The storage of snow. 15. The handling and storage of fuel. 16. The handling and storage of a dense non-aqueous phase liquid. 17. The handling and storage of an organic solvent. 18. The management of runoff that contains chemicals used in the de-icing of aircraft. 19. 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. 20. An activity that reduces the recharge of an aquifer. 21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3. 	Clean Water Act, 2006 Section 2 (1): definitions
Section 13 (1) Numbers 2 to 6	Other information to	13(1)The following information shall, in accordance with the regulations, the rules and the terms of reference, be included	Clean Water Act, 2006 15(2) (i): 'contain such other information as is

	<p>be contained in assessment report</p>	<p>in an assessment report under clause 15 (2) (i) of the Act:</p> <p>2. For each vulnerable area identified under clause 15 (2) (d) or (e) of the Act, an identification of the following areas within the vulnerable area:</p> <ul style="list-style-type: none"> i. Areas where an activity listed under subclause 15 (2) (g) (i) of the Act is or would be a moderate drinking water threat. ii. Areas where an activity listed under subclause 15 (2) (g) (i) of the Act is or would be a low drinking water threat. iii. Areas where a condition listed under subclause 15 (2) (g) (ii) of the Act is a moderate drinking water threat. iv. Areas where a condition listed under subclause 15 (2) (g) (ii) of the Act is a low drinking water threat. <p>3. For each area identified under subclause 15 (2) (h) (i) of the Act, the circumstances in which the activity listed under clause 15 (2) (g) of the Act is or would be a significant drinking water threat.</p> <p>4. For each area identified under subparagraph 2 i, the circumstances in which the activity listed under subclause 15 (2) (g) (i) of the Act is or would be a moderate drinking water threat.</p> <p>5. For each area identified under subparagraph 2 ii, the circumstances in which the activity listed under subclause 15 (2) (g) (i) of the Act is or would be a low drinking water threat.</p> <p>6. For each vulnerable area identified under clause 15 (2) (d) or (e) of the Act,</p> <ul style="list-style-type: none"> i. the number of locations at which a person is engaging in an activity listed under subclause 15 (2) (g) (i) of the Act that is or would be a significant drinking water threat.... 	<p>prescribed by the regulations'</p> <p>15 (2) (d) or (e): <i>(d) refers to identifying SGRAs and HVAs, (e) refers to identifying IPZs and WHPAs</i></p> <p><u>15(2)(g)(i and ii):</u></p> <p>(g) list, for each vulnerable area identified under clauses (d) and (e),</p> <ul style="list-style-type: none"> (i) activities that are or would be drinking water threats, and (ii) conditions that result from past activities and that are drinking water threats; <p><u>15 (2) (h) (i):</u></p> <p>(h) identify, within each vulnerable area identified under clauses (d) and (e),</p> <ul style="list-style-type: none"> (i) the areas where an activity listed under clause (g) is or would be a significant drinking water threat, and (ii) the areas where a condition listed under clause (g) is a significant drinking water threat; and
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<p>Section 15 (2) (c) (iii)</p>	<p>Consultation on draft assessment report</p>	<p>As soon as reasonably possible after publishing the draft on the Internet, the source protection committee shall, (a)... (b)... (c) give a copy of the notice referred to in clause (a) to, (i) the clerk., (ii) if any part of the reserve..., (iii) every person known to the source protection committee who is engaging in an activity listed under subclause 15 (2) (g) (i) of the Act that is or would be a significant drinking water threat, (iv).. (v)..</p>	<p>Clean Water Act, 2006 <u>15(2)(g)(i and ii):</u> (g) list, for each vulnerable area identified under clauses (d) and (e), (i) activities that are or would be drinking water threats, and (ii) conditions that result from past activities and that are drinking water threats; 15 (2) (d) or (e): (d) refers to identifying SGRAs and HVAs, (e) refers to identifying IPZs and WHPAs</p>
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Table 6 Clean Water Act (2006) references to threats

Rule/Section	Sub Title	Content	References within this Rule/Section
Section 15 (2) (g) and (h)	Assessment reports contents	<p>An assessment report shall, in accordance with the regulations, the rules and the terms of reference ,....</p> <p>(g) list, for each vulnerable area identified under clauses (d) and (e),</p> <ul style="list-style-type: none"> (i) activities that are or would be drinking water threats, and (ii) conditions that result from past activities and that are drinking water threats; <p>(h) identify, within each vulnerable area identified under clauses (d) and (e),</p> <ul style="list-style-type: none"> (i) the areas where an activity listed under clause (g) is or would be a significant drinking water threat, and (ii) the areas where a condition listed under clause (g) is a significant drinking water threat; and <p>(i).....</p>	<p>Clean Water Act 15 (2) (d) or (e): <i>(d) refers to identifying SGRAs and HVAs,</i> <i>(e) refers to identifying IPZs and WHPAs</i></p>

10 Appendix B – Significant Threats Data Requirements

This appendix will contain the data requirements associated with Deliverable 16. The following are provided as examples only and will be replaced with a proper database definition of the fields and data to be submitted.

- Location of the activity (geospatial information – points, lines, polygons) in a geodatabase with object ID's associated with data included in a table below
- Roll#/ PIN of the property (or properties) on which the activity is being undertake, if appropriate and a specification of the date or version of the property data used to identify the parcel) for corridors this would not be applicable.
- Vulnerability score used in assessing the risk associated with this activity
- Activity being considered a threat (ActivityID)
- Circumstances associated with the activity(CircumstanceID)
- Person or company engaged in the activity (if known)
- Circumstances associated with the activity (rolled up to the property parcel)
- Details of the activity being undertaken on the site such as whether there are multiple occurrences at this location and whether it is know to be undertaken by multiple parties
- Risk score calculated based on the above
- An indication of the relative level of uncertainty (high or low)associated with the level of risk at that location
- Assumptions made regarding the activity and circumstances and the level of uncertainty associated with those assumptions
- The source of the information utilized in this assessment needs to be identified

Lower Thames Valley Source Protection Area Assessment Report

Threats and Circumstances Tables

Threats Tables

The tables included and referenced in this appendix are intended to provide information on the types of activities which are or would be significant, moderate or low threats, as well as the circumstances which would result in the activity being a significant, moderate or low threat.

The province developed tables of drinking water threats which are posted on the MOE website (<http://www.ene.gov.on.ca/en/water/cleanwater/cwa-technical-rules.php>). These tables include the prescribed activities that can be identified as threats, the vulnerable areas where they can be identified as threats, the circumstances which make them threats and the level of risk that they pose in that area under those circumstances. The Technical Rules require that assessment reports identify the activities which would be threats and the areas where, within the vulnerable areas, they would be considered significant, moderate or low threats. The tables included and referenced in this appendix are intended to help satisfy that requirement.

The tables in this appendix should be read in conjunction with the maps related to Section 7 – Threats and Risk Assessment and the tables included on those maps. These maps, included in Appendix 1 of the Assessment Report, identify the areas where activities are or would be significant, moderate or low threats. The tables on the maps indicate the vulnerability and vulnerable area in which the activities would be significant, moderate or low threats. The tables included in this appendix indicate which activities in each of those vulnerable areas (as identified by the vulnerability score) would be significant, moderate or low. The tables are numbered based on the appendix that they are contained in (A10), the series (1), the vulnerable area (I2 for IPZ-2, WB for WHPA-B), and the vulnerability score (4.6) (eg. A10-1-I2-4.6 would indicate the activities which would be threats in an IPZ-2 with a vulnerability score of 4.6). The tables are included in the appendix in alpha-numeric order.

To determine the circumstances which would result in activities being significant, moderate or low, one can refer to the province's tables of drinking water threats discussed in the previous paragraph. The province has also developed individual tables which list the activities as either significant, moderate or low for a specific type of

vulnerable area and with a specific vulnerability score. There are 76 tables many of which are up to or over 50 pages. As such they have not been included in this Assessment Report, but are available on the internet. A link to the tables is provided at <http://www.sourcewaterprotection.on.ca/threats>.

An interactive threats tool has also been developed to search, query and filter the threats tables. This tool is based on the lookup tables which the province utilized to develop the tables of drinking water threats. This tool continues to be refined and updated as the province issues updated versions of the lookup tables. It is provided "*as is- with no warranty as to its accuracy or completeness*". The tool allows the user to explore the activities and the circumstances around those activities and determine the potential level of risk that would result in that area. As the work is continually being updated and improved it is important that the user refer to the official version of the tables of drinking water threats to confirm the results from the threats tool. This tool can be accessed from the web page <http://www.sourcewaterprotection.on.ca/threats>.

Table A10-1-HV-6 Circumstance which would result in a threat by prescribed activity in a HVA with a vulnerability score of 6	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	Yes	No	Yes	No
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	Yes	No	Yes	No
3. The application of agricultural source material to land.	No	No	No	No	Yes	No
4. The storage of agricultural source material.	No	No	No	No	Yes	No
5. The management of agricultural source material.	n/a	No	n/a	No	n/a	No
6. The application of non-agricultural source material to land.	No	No	No	No	Yes	No
7. The handling and storage of non-agricultural source material.	No	No	No	No	Yes	No
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	Yes	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	Yes	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	Yes	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	Yes	n/a
12. The application of road salt.	No	n/a	No	n/a	Yes	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	Yes	n/a
14. The storage of snow.	No	n/a	No	n/a	Yes	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	Yes	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	No	n/a	Yes	n/a	Yes	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	Yes	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	Yes	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	No	Yes	No
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-I1- 5 Circumstance which would result in a threat by prescribed activity in an IPZ-1 with a vulnerability score of 5	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	No	No	Yes	Yes
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	No	No	Yes	Yes
3. The application of agricultural source material to land.	No	No	No	No	Yes	Yes
4. The storage of agricultural source material.	No	No	No	No	Yes	Yes
5. The management of agricultural source material.	No	No	No	No	No	No
6. The application of non-agricultural source material to land.	No	No	No	No	Yes	Yes
7. The handling and storage of non-agricultural source material.	No	No	No	No	Yes	Yes
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	Yes	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	Yes	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	Yes	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	Yes	n/a
12. The application of road salt.	No	n/a	No	n/a	Yes	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	Yes	n/a
14. The storage of snow.	No	n/a	No	n/a	Yes	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	Yes	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	No	n/a	n/a	n/a	n/a	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	Yes	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	Yes	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	No	Yes	Yes
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-I1- 6 Circumstance which would result in a threat by prescribed activity in an IPZ-1 with a vulnerability score of 6	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	No	Yes	Yes	No
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	Yes	Yes	Yes	Yes
3. The application of agricultural source material to land.	No	No	No	Yes	Yes	No
4. The storage of agricultural source material.	No	No	No	Yes	Yes	Yes
5. The management of agricultural source material.	No	No	No	No	No	Yes
6. The application of non-agricultural source material to land.	No	No	No	Yes	Yes	Yes
7. The handling and storage of non-agricultural source material.	No	No	No	Yes	Yes	Yes
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	Yes	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	Yes	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	Yes	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	Yes	n/a
12. The application of road salt.	No	n/a	No	n/a	Yes	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	Yes	n/a
14. The storage of snow.	No	n/a	No	n/a	Yes	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	Yes	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	No	n/a	n/a	n/a	n/a	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	Yes	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	Yes	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	Yes	Yes	No
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-I1- 7 Circumstance which would result in a threat by prescribed activity in an IPZ-1 with a vulnerability score of 7	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	Yes	Yes	Yes	No
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	Yes	Yes	Yes	Yes
3. The application of agricultural source material to land.	No	No	Yes	Yes	Yes	No
4. The storage of agricultural source material.	No	No	Yes	Yes	Yes	Yes
5. The management of agricultural source material.	No	No	No	No	No	Yes
6. The application of non-agricultural source material to land.	No	No	Yes	Yes	Yes	Yes
7. The handling and storage of non-agricultural source material.	No	No	Yes	Yes	Yes	Yes
8. The application of commercial fertilizer to land.	No	n/a	Yes	n/a	Yes	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	Yes	n/a
10. The application of pesticide to land.	No	n/a	Yes	n/a	Yes	n/a
11. The handling and storage of pesticide.	No	n/a	Yes	n/a	Yes	n/a
12. The application of road salt.	No	n/a	Yes	n/a	Yes	n/a
13. The handling and storage of road salt.	No	n/a	Yes	n/a	Yes	n/a
14. The storage of snow.	No	n/a	Yes	n/a	Yes	n/a
15. The handling and storage of fuel.	No	n/a	Yes	n/a	Yes	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	No	n/a	n/a	n/a	n/a	n/a
17. The handling and storage of an organic solvent.	No	n/a	Yes	n/a	Yes	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	Yes	n/a	Yes	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	Yes	No	Yes	No
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-I2- 4 Circumstance which would result in a threat by prescribed activity in an IPZ-2 with a vulnerability score of 4	<i>Threat level dependant on circumstances related to the activity</i>					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	No	No	No	No
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	No	No	No	No
3. The application of agricultural source material to land.	No	No	No	No	No	No
4. The storage of agricultural source material.	No	No	No	No	No	No
5. The management of agricultural source material.	No	No	No	No	No	No
6. The application of non-agricultural source material to land.	No	No	No	No	No	No
7. The handling and storage of non-agricultural source material.	No	No	No	No	No	No
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	No	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	No	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	No	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	No	n/a
12. The application of road salt.	No	n/a	No	n/a	No	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	No	n/a
14. The storage of snow.	No	n/a	No	n/a	No	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	No	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	No	n/a	n/a	n/a	n/a	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	No	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	No	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	No	No	No
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-I2- 4.2 Circumstance which would result in a threat by prescribed activity in an IPZ-2 with a vulnerability score of 4.2	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	No	No	No	Yes
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	No	No	Yes	Yes
3. The application of agricultural source material to land.	No	No	No	No	No	Yes
4. The storage of agricultural source material.	No	No	No	No	No	Yes
5. The management of agricultural source material.	No	No	No	No	No	No
6. The application of non-agricultural source material to land.	No	No	No	No	No	Yes
7. The handling and storage of non-agricultural source material.	No	No	No	No	No	Yes
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	No	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	No	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	Yes	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	No	n/a
12. The application of road salt.	No	n/a	No	n/a	No	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	No	n/a
14. The storage of snow.	No	n/a	No	n/a	No	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	No	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	No	n/a	No	n/a	No	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	No	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	No	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	No	No	Yes
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-I2- 4.8 Circumstance which would result in a threat by prescribed activity in an IPZ-2 with a vulnerability score of 4.8	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	No	No	Yes	Yes
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	No	No	Yes	Yes
3. The application of agricultural source material to land.	No	No	No	No	Yes	Yes
4. The storage of agricultural source material.	No	No	No	No	Yes	Yes
5. The management of agricultural source material.	No	No	No	No	No	No
6. The application of non-agricultural source material to land.	No	No	No	No	Yes	Yes
7. The handling and storage of non-agricultural source material.	No	No	No	No	Yes	Yes
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	Yes	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	Yes	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	Yes	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	Yes	n/a
12. The application of road salt.	No	n/a	No	n/a	Yes	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	Yes	n/a
14. The storage of snow.	No	n/a	No	n/a	Yes	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	Yes	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	No	n/a	n/a	n/a	n/a	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	Yes	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	Yes	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	No	Yes	Yes
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-I2- 5.6 Circumstance which would result in a threat by prescribed activity in an IPZ-2 with a vulnerability score of 5.6	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	No	No	Yes	Yes
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	No	No	Yes	Yes
3. The application of agricultural source material to land.	No	No	No	No	Yes	Yes
4. The storage of agricultural source material.	No	No	No	No	Yes	Yes
5. The management of agricultural source material.	No	No	No	No	No	No
6. The application of non-agricultural source material to land.	No	No	No	No	Yes	Yes
7. The handling and storage of non-agricultural source material.	No	No	No	No	Yes	Yes
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	Yes	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	Yes	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	Yes	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	Yes	n/a
12. The application of road salt.	No	n/a	No	n/a	Yes	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	Yes	n/a
14. The storage of snow.	No	n/a	No	n/a	Yes	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	Yes	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	No	n/a	n/a	n/a	n/a	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	Yes	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	Yes	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	No	Yes	Yes
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-SG-2 Circumstance which would result in a threat by prescribed activity in a SGRA with a vulnerability score of 2	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	No	No	No	No
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	No	No	No	No
3. The application of agricultural source material to land.	No	No	No	No	No	No
4. The storage of agricultural source material.	No	No	No	No	No	No
5. The management of agricultural source material.	No	No	No	No	No	No
6. The application of non-agricultural source material to land.	No	No	No	No	No	No
7. The handling and storage of non-agricultural source material.	No	No	No	No	No	No
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	No	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	No	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	No	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	No	n/a
12. The application of road salt.	No	n/a	No	n/a	No	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	No	n/a
14. The storage of snow.	No	n/a	No	n/a	No	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	No	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	No	n/a	No	n/a	No	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	No	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	No	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	No	No	No
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-SG-4 Circumstance which would result in a threat by prescribed activity in a SGRA with a vulnerability score of 4	<i>Threat level dependant on circumstances related to the activity</i>					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	No	No	No	No
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	No	No	No	No
3. The application of agricultural source material to land.	No	No	No	No	No	No
4. The storage of agricultural source material.	No	No	No	No	No	No
5. The management of agricultural source material.	No	No	No	No	No	No
6. The application of non-agricultural source material to land.	No	No	No	No	No	No
7. The handling and storage of non-agricultural source material.	No	No	No	No	No	No
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	No	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	No	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	No	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	No	n/a
12. The application of road salt.	No	n/a	No	n/a	No	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	No	n/a
14. The storage of snow.	No	n/a	No	n/a	No	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	No	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	No	n/a	No	n/a	No	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	No	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	No	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	No	No	No
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-SG-6 Circumstance which would result in a threat by prescribed activity in a SGRA with a vulnerability score of 6	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	Yes	No	Yes	No
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	Yes	No	Yes	No
3. The application of agricultural source material to land.	No	No	No	No	Yes	No
4. The storage of agricultural source material.	No	No	No	No	Yes	No
5. The management of agricultural source material.	n/a	No	n/a	No	n/a	No
6. The application of non-agricultural source material to land.	No	No	No	No	Yes	No
7. The handling and storage of non-agricultural source material.	No	No	No	No	Yes	No
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	Yes	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	Yes	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	Yes	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	Yes	n/a
12. The application of road salt.	No	n/a	No	n/a	Yes	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	Yes	n/a
14. The storage of snow.	No	n/a	No	n/a	Yes	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	Yes	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	No	n/a	Yes	n/a	Yes	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	Yes	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	Yes	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	No	Yes	No
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-WA-10 Circumstance which would result in a threat by prescribed activity in a WHPA-A with a vulnerability score of 10	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	Yes	Yes	Yes	No	Yes	No
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	Yes	Yes	Yes	Yes	Yes	No
3. The application of agricultural source material to land.	Yes	Yes	Yes	No	No	No
4. The storage of agricultural source material.	Yes	Yes	Yes	No	No	No
5. The management of agricultural source material.	No	No	No	No	No	No
6. The application of non-agricultural source material to land.	Yes	Yes	Yes	Yes	No	No
7. The handling and storage of non-agricultural source material.	Yes	Yes	Yes	Yes	No	No
8. The application of commercial fertilizer to land.	Yes	n/a	Yes	n/a	No	n/a
9. The handling and storage of commercial fertilizer.	Yes	n/a	Yes	n/a	Yes	n/a
10. The application of pesticide to land.	Yes	n/a	Yes	n/a	Yes	n/a
11. The handling and storage of pesticide.	Yes	n/a	Yes	n/a	Yes	n/a
12. The application of road salt.	Yes	n/a	Yes	n/a	Yes	n/a
13. The handling and storage of road salt.	Yes	n/a	Yes	n/a	Yes	n/a
14. The storage of snow.	Yes	n/a	Yes	n/a	No	n/a
15. The handling and storage of fuel.	Yes	n/a	Yes	n/a	Yes	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	Yes	n/a	No	n/a	No	n/a
17. The handling and storage of an organic solvent.	Yes	n/a	Yes	n/a	Yes	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	Yes	n/a	Yes	n/a	Yes	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	Yes	Yes	Yes	No	No	No
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-WB-6 Circumstance which would result in a threat by prescribed activity in a WHPA-B with a vulnerability score of 6	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	Yes	No	Yes	Yes
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	Yes	No	Yes	Yes
3. The application of agricultural source material to land.	No	No	No	No	Yes	Yes
4. The storage of agricultural source material.	No	No	No	No	Yes	Yes
5. The management of agricultural source material.	No	No	No	No	No	No
6. The application of non-agricultural source material to land.	No	No	No	No	Yes	Yes
7. The handling and storage of non-agricultural source material.	No	No	No	No	Yes	Yes
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	Yes	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	Yes	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	Yes	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	Yes	n/a
12. The application of road salt.	No	n/a	No	n/a	Yes	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	Yes	n/a
14. The storage of snow.	No	n/a	No	n/a	Yes	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	Yes	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	Yes	n/a	No	n/a	No	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	Yes	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	Yes	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	No	Yes	Yes
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-WC-2 Circumstance which would result in a threat by prescribed activity in a WHPA-C with a vulnerability score of 2	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	No	No	No	No
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	No	No	No	No
3. The application of agricultural source material to land.	No	No	No	No	No	No
4. The storage of agricultural source material.	No	No	No	No	No	No
5. The management of agricultural source material.	No	No	No	No	No	No
6. The application of non-agricultural source material to land.	No	No	No	No	No	No
7. The handling and storage of non-agricultural source material.	No	No	No	No	No	No
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	No	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	No	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	No	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	No	n/a
12. The application of road salt.	No	n/a	No	n/a	No	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	No	n/a
14. The storage of snow.	No	n/a	No	n/a	No	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	No	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	Yes	n/a	No	n/a	No	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	No	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	No	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	No	No	No
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-WC-4 Circumstance which would result in a threat by prescribed activity in a WHPA-C with a vulnerability score of 4	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	No	No	No	No
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	No	No	No	No
3. The application of agricultural source material to land.	No	No	No	No	No	No
4. The storage of agricultural source material.	No	No	No	No	No	No
5. The management of agricultural source material.	No	No	No	No	No	No
6. The application of non-agricultural source material to land.	No	No	No	No	No	No
7. The handling and storage of non-agricultural source material.	No	No	No	No	No	No
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	No	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	No	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	No	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	No	n/a
12. The application of road salt.	No	n/a	No	n/a	No	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	No	n/a
14. The storage of snow.	No	n/a	No	n/a	No	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	No	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	Yes	n/a	No	n/a	No	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	No	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	No	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	No	No	No
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						

Table A10-1-WD-2 Circumstance which would result in a threat by prescribed activity in a WHPA-D with a vulnerability score of 2	Threat level dependant on circumstances related to the activity					
Prescribed Drinking Water Threat (Activity)	Significant		Moderate		Low	
	Chemical	Pathogen	Chemical	Pathogen	Chemical	Pathogen
1. The establishment, operation or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.	No	No	No	No	No	No
2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage.	No	No	No	No	No	No
3. The application of agricultural source material to land.	No	No	No	No	No	No
4. The storage of agricultural source material.	No	No	No	No	No	No
5. The management of agricultural source material.	No	No	No	No	No	No
6. The application of non-agricultural source material to land.	No	No	No	No	No	No
7. The handling and storage of non-agricultural source material.	No	No	No	No	No	No
8. The application of commercial fertilizer to land.	No	n/a	No	n/a	No	n/a
9. The handling and storage of commercial fertilizer.	No	n/a	No	n/a	No	n/a
10. The application of pesticide to land.	No	n/a	No	n/a	No	n/a
11. The handling and storage of pesticide.	No	n/a	No	n/a	No	n/a
12. The application of road salt.	No	n/a	No	n/a	No	n/a
13. The handling and storage of road salt.	No	n/a	No	n/a	No	n/a
14. The storage of snow.	No	n/a	No	n/a	No	n/a
15. The handling and storage of fuel.	No	n/a	No	n/a	No	n/a
16. The handling and storage of a dense non-aqueous phase liquid.	No	n/a	No	n/a	No	n/a
17. The handling and storage of an organic solvent.	No	n/a	No	n/a	No	n/a
18. The management of runoff that contains chemicals used in the de-icing of aircraft.	No	n/a	No	n/a	No	n/a
19. 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.	n/a	n/a	n/a	n/a	n/a	n/a
20. An activity that reduces the recharge of an aquifer.	n/a	n/a	n/a	n/a	n/a	n/a
21. The use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard. O. Reg. 385/08, s. 3.	No	No	No	No	No	No
Notes: - n/a means that the combination of vulnerable area and activity is not applicable. In the case of activities 19 and 20 which pertain to water quantity threats, these will only be identified where a WHPA-Q1 or Q2 have been identified through a Tier 3 Water Budget. Current information indicates that there are none of these areas identified in the LTVSPA.						