

Directions received from Ian Smith, Director, Source Protection Programs Branch, Ministry of Environment, as per letter dated May 10, 2011

No.	Direction	Response	Section	Early Notification Letter No.
Updated Task	WHPA-E studies for GUDI systems	As per the Dillon Consulting Ltd March 2011 and April 2011 reports, and the UTRCA April 2011 report, WHPA-Es were delineated and assessed for the Dorchester, Fanshawe, Thamesford, Woodstock rural and St. Marys well supply systems. The systems did not meet Technical Rule 50 (2) and (3) and therefore WHPA-Fs were not delineated. The Kilworth-Komoka wells were decommissioned in October 2010. Therefore the Kilworth-Komoka and Highgate well systems were removed from the list of GUDI studies in the current ARs. Risk assessment for delineated WHPA-Es has not been completed and is identified as a data gap. (As well, the MOE directed that the workplans for WHPA-E and WHPA-F for the Highgate system not be included in the Lower Thames Valley AR as information available at this time indicates that the system does not meet the test in Technical Rule 49 (3)). The potential drinking water threat levels (based on vulnerability scores) are shown in new maps which are noted in the AR.	Section 4.3.1: Table 4-1, Section 4.3.4: text, Section 4.3.5: text and new Table 4-5, Section 4.3.6, Section 4.6: Table 4-6. New WHPA-E Maps 4-1-2a, 4-1-4a, 4-1-16a, 4-1-17a and 4-1-21a. New WHPA-E potential threat level maps 7-3-2a, 7-3-4a, 7-3-16a, 7-3-17a, 7-3-21a. Sections 7.2.4, 7.2.6, 7.2.17, 7.2.18, 7.2.22, 7.4, Section 9: Table 9-1. System Summaries for Dorchester, City of London, Thamesford and St. Marys: all figures (except Hyde Park), text on WHPA, vulnerability assessment, peer review, and data gaps. Section Summary 4: text in sections on WHPA, Table 1, and data gaps. Section Summary 7: data gaps. Section Summary 9: Table 1. Appendix 1, Appendix 10, Appendix 12, Appendix 13, List of Maps	(NA)
Amended Task	Sewer Threats consideration in Perth County systems	Additional analysis was done to identify chemical and pathogen type threats from sewer lines, related to 'the establishment, operation or maintenance of a system that collects, stores, transmits, treats or disposes of sewage', for the Perth, Town of St. Marys and City of Stratford well systems. These types of threats were identified in the WHPA-As of the Mitchell, St. Marys, Shakespeare and Stratford systems and is now reflected in the amended AR. This has resulted in an increase in the number of locations of significant threats. This item is now removed from data gaps sections.	Section 7: Table 7-1, Section 7.2.2: Table 7-7, Section 7.2.19: Table 7-27, Section 7.2.21: Table 7-29, Section 7.2.22: Table 7-30, Section 7.2.24: Table 7-32, Section 7.4. Section 9: Table 9-1. Section Summary 7: Table 3 and data gaps section, Section Summary 9: Table 1. Mitchell, St. Marys, Shakespeare, Stratford System Summaries: Table 2. Appendix 12 (list of references)	(NA)

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Amended Task	Pasture and livestock confinement area threats consideration	Additional analysis was done to identify threats related to 'the use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard'. Findings: (1) A field visit was made to a property (that spans the Dorchester WHPA-A and WHPA-B) that was already identified in the proposed AR as a significant threat (related to farm activities). The field visit confirmed that the property is not an animal farm. However another property was identified as having animal farm activities (that spans the WHPA-A and WHPA-B). Therefore the count of significant threats for this well system remains the same. (2) Chemical type threats related to this activity are now identified in the rural Woodstock WHPA-B and Ingersoll WHPA-A (one property in each system's WHPA). One property each were identified at the St. Pauls WHPA-A (chemical and pathogen) and St. Marys WHPA-B (pathogen). For these four systems, the properties on which the activities occur were previously identified to have other significant threats occurring.	(2) Section 7: Table 7-1, Table 7-19, Table 7-26, Table 7-30 and Table 7-31. Woodstock System Summary: Table 3, Ingersoll, St. Pauls and St. Marys System Summaries: Table 2. Section Summary 7: Table 3. Appendix 12 (list of references).	(NA)
1	Amend the AR to include the assessment of drought scenerios (2 and 10 year) and a quantification of uncertainty for each of the Tier 2 subwatersheds.	The AR is revised to include the drought scenario output from the most recent version of the Tier 2 water budget report. No additional subwatersheds moved forward to a Tier 3 water budget as a result of drought analysis. The quantification of uncertainty for each of the Tier 2 subwatersheds is now provided in the AR	Drought scenarios described in Section 3.4, 3.3.5 (peer review text), Section 3.4.1, Section 3.6 (Table 3-8), Section 9: Table 9-1. Section Summary 3: data gaps text. Section Summary 9: Table 1	1a
2	Amend the AR to include a table that shows all Permit To Take Water (PTTW) water takings, their proposed use, maximum permitted amount and actual taking with relevant Tier 2 information. Additional details for this direction: Although the AR indicates this information can be found in the reference documents, the Water Budget (WB) Technical Reports are not provided on the SPC website for public access. While the AR Checklist notes that the AR Table 3-1 Groundwater use in the UTRSPA should contain the required Tier 2 WB information, a table footnote states the information is only from Tier 1 WB data. The rationale is provided in the text provided in the AR is not adequate in meeting the legislative requirements for the Tier 2 WB.	This information is included as an appendix in the Tier 2 water budget report, and also in the Tier 1, for surface water permits. The T1 and T2 water budget documents will be available on TSR web site. These are referenced in the amended AR. Table 3-1 was recreated using Tier 2 data.	Section 3.2.5; Table 3-1, Appendix 12 (list of references)	2a

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3	Amend the AR to include a table that presents all the updated water demand values for the Tier 2 Water Budget evaluation for the groundwater component. Additional details for this direction: Although the AR Table 3-3 Water Budget Summary was taken from Tier 1 work because Tier 2 analysis was only completed for groundwater systems, it is still a legislative requirement to summarize the Tier 2 Water Budget values for the groundwater.	Updated groundwater demand values for the Tier 2 Water Budget are included in the Tier 2 water budget report, which will be available on TSR web site. These are referenced in the amended AR. Table 3-3 was updated with new information from the T2 water budget and now describes water budget summaries based on the T2 information for all subwatersheds where T2 work was conducted.	Section 3.6: Table 3-3	2b
4	Provide an explanation on how the requirements of Technical Rule 46 were applied for the generation of Map 4-2-1 :Significant Groundwater Recharge Areas" in the proposed AR.	Rule 46 allows professional judgment in determining and defining SGRA areas. The mapping was revised, as allowed under this rule, to remove areas which some water budget peer review members felt were groundwater discharge rather than recharge areas in river valley/flood plain areas. The exercise of overlaying the groundwater vulnerability onto the SGRAs creates "overlay artifacts" or "sliver polygons". This occurs where the boundary of a contiguous groundwater vulnerability area falls close to the boundary of the SGRA. Since the datasets do not perfectly align to each other, the slight gaps and overlaps between the boundaries create small, uniquely valued polygons. In some cases, these polygons will be assigned a Vulnerability Score of 6 (i.e. potential for Low Threats) but have areas less than 1 square meter in size. This should be considered in policy development and/or implementation for these areas.	Section 3.5, Section 4.5 as well as section summaries	2c
5	Amend the AR to separate Tables 3-6 "Groundwater potential for stress (Average Annual Conditions)" and Table 3-7 "Groundwater potential for stress (Maximim Monthly Conditions)" for Tier 1 and Tier 2 results, clearly indicating what boundaries were used for each table. Additional details for this direction: This item is not compliant with the Technical Rules. Given the areas used for Tier 1 and Tier 2 are different, having one table combines different areas and tiers reduces the clarity of the AR.	Tables 3-6 and 3-7 were separated into 3-6a, 3-6b, 3-7a and 3-7b, where 'a' suffix denotes Tier 1 results, 'b' suffix, Tier 2. Results are still only presented for the most advanced analysis (i. e. subwatersheds which moved to Tier 2 do not have the Tier 1 stress assessments included, but rather a reference is made to the Tier 1 water budget report).	Section 3.4: Tables 3-6a, 3-6b, 3-7a, 3-7b.	3

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6	Amend the AR to remove references and work plans associated with the confirmation or existing threats (tier 2 risk assessment). Additional details for this direction: References that should be amended include statements on page 7-16, 7-40, and 9-3. As previously communicated, this additional work is considered out of scope for this round of planning as threats verification can be conducted as part of the development of policies in the source protection plan.	The AR is revised to indicate that the tier 2 (site specific) risk assessment, to confirm significant threats, would be conducted while developing source protection plans (2012) if needed.	Section 7.1.5, Section 7.3, Section 9: Table 9-1, Section Summary 7: data gaps, Section Summary 9: Table 1, All system summaries	1b
7	Amend the AR to apply the correct methodology to enumerate threats related to ASM generation and storage. Additional details for this direction: These calculations should be done using parcel specific information. Two different methods were described in the report; one in the introductory section and one in the section that discusses the specific threat. The AR must document clearly what method was used in the actual enumeration of threats. Similar errors were appropriately corrected in the St. Clair and Lower Thames ARs within the Thames-Sydenham and Region Source Protection Region.	The methodology in Section 7.1.1 is revised to better clarify the methods followed in enumerating threats related to 'the storage of agricultural storage material' and 'the use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard'. In determining chemical threats related to 'the use of land as livestock grazing or pasturing land, an outdoor confinement area or a farm-animal yard', the livestock density calculation is performed on an individual farm parcel rather than the whole of a vulnerable area. This did not result in any changes to maps. It did not result in any additional significant threats.	Section 7.1.1 (subsections 'Mapping of Impervious Area, Managed Lands and Livestock Density', 'Livestock Density', 'Chemical Threats Related to the Use of Land for Livestock Grazing, Pasturing or Outdoor Confinement Area or Farm-Animal Yard', and 'Chemical Threats Related to Agricultural Source Material Storage').	1c
8	Amend the AR to remove the work plan for WHPA E and F delineation and vulnerability assessment for the Kilworth-Komoka Drinking Water System. Additional details for this direction: As per my UAR response letter on December 20, 2010, I understand that the SPC/SPA will not be conducting any further source protection work around the Kilworth-Komoka Subdivision System as it was decommissioned in October 2010. After the Source Protection Plan development is completed, the SPC/SPA must amend the Terms of Reference to address the need to remove this system.	The Kilworth-Komoka wells were decommissioned in October 2010 (information from Municipality of Middlesex Centre). They are therefore removed from the amended AR.	Throughout sections 2 (Table 2-4), 4, 5, 6, 7 and 9, summaries and Maps. The Kilworth-Komoka system summary is removed.	(NA)
9	Amend the AR to remove references to the work plans and further investigation for Conditions Assessment. Additional details for this direction: This includes the reference in Table 9-1 "Work Plan to fill Data and Analysis Gaps". As per my UAR response letter on December 20, 2010, it is my understanding that the SPC will not be proceeding with the work associated with the conditions investigations. The ministry does not expect the SPC/SPAs to conduct a study to identify conditions as it is not necessary to undertake such work for conditions SPC is not aware of or the public has not identified to the SPC.	References to work plans for further investigations towards conditions assessment is removed from the AR.	Section 6.3, Section 9.1: Table 9-1, section summary 6 and 9.	(NA)

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10	Amend the AR to remove the workplans for sampling programs to identify issues.	Table 5-7 is moved from Section 5.6 (Work Plan) to Section 5.7 (Data Gaps) to indicate that the source of some of the identified issues is a data gap and how to fill that data gap. Text in Section 5-7 will be added to describe this data gap. Work plans to identify threats related to issues are removed but further clarification is provided: If more information becomes available to the SPC to identify the sources of the issues, and the issues contributing area and activities must be determined, they will be included in a subsequent AR.	Section 5.6: Table 5-7, Section 5.7, Section 7.4, Section 9: Table 9-1. Section Summary 5: data gaps text, Section Summary 7: data gaps text, Section Summary 9: Table 1	(NA)
11	Amend the AR to remove workplans for issues where it has not been determined whether the source of the issues is anthropogenic. Additional details for this direction: Any issues that do not meet the test in Rule 114 are documented as per Technical Rule 115.1. The Rules do not allow that the AR include work plans to investigate issues. The only situation where a workplan is allowed in the Technical Rules related to issues is if an issue is documented as per Rule 115 and the issue contributing area (Technical Rule 115 (3) and the identification of threats (Technical Rule 115 (4) can not be completed. In such a case, a work plan as per Rule 116 is required. Additional details for directions 10 and 11: The work plans includes ones indicated in Table 5.7 :Work Plan for Identification of an Area and Activity Contributing to an Issue" and Table 9-1 "Work Plan to fill Data and Analysis Gaps". The Technical Rules allow or require work plans for specific types of work. The identification of issues or the determination if the issue is anthropogenic or not is not one of the allowed work plans. Any future in	Table 5-7 is moved from Section 5.6 (Work Plan) to Section 5.7 (Data Gaps) to indicate that the source of some of the identified issues is a data gap and how to fill that data gap. Text in Section 5-7 will be added to describe this data gap. Work plans to identify threats related to issues are removed but further clarification is provided: If more information becomes available to the SPC to identify the sources of the issues, and the issues contributing area and activities must be determined, they will be included in a subsequent AR.	Section 5.6: Table 5-7, Section 5.7, Section 7.4, Section 9: Table 9-1. Section Summary 5: data gaps text, Section Summary 7: data gaps text, Section Summary 9: Table 1	(NA)
12	Once the AR is revised based on these directions and before resubmitting the amended AR in accordance with the Act, the Source Protection Authority shall consult with the Source Protection Committee and provide proof thereof with the resubmitted AR.	The Source Protection Authority shall consult with the Source Protection Committee before resubmitting the AR.	NA	(NA)
13	Once the AR is revised based on these directions and before resubmitting the amended AR in accordance with the Act, the Source Protection Authority shall consult with those persons or bodies impacted by the changes in an appropriate manner and consider the consultation requirements in section 18 of the CWA for new information included in the AR that forms part of the updated AR workplan and provide proof thereof with the resubmitted AR.	Consultation as per Section 18 of the CWA will be conducted and documented in Appendix 4.	Appendix 4	(NA)

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14	The Source Protection Authority shall include with the resubmitted AR a memo or document outlining the changes made to the AR, as per these directions, including chapter references in the AR where changes were made; and	This table of changes made to the AR will be provided to the MOE with the submission of the AR.	NA	(NA)
15	The AR is to be submitted to the ministry in the form of both a hard copy and electronic version for the ministry's review.	Both hard copy and CD (electronic) will be provided to the MOE.	NA	(NA)

OTHER CHANGES TO UPPER THAMES RIVER PROPOSED ASSESSMENT REPORT

No.	Guideline	Description of Change Made	Section/Appendix Changed	Comment made by
1	Consider revising the AR maps to indicate regional fracturing and karst features where they are considered as factors for assessment of groundwater vulnerability.	CA staff are reviewing recent minimal data from the Ministry of Northern Development and Mines; there is a lack of comprehensive GID based data to map these features.	NA	MOE Minor Supplemental Comment
2	Consider including include both the percent water demand value and corresponding stress category in the same table for each subwatershed evaluated. This should be done to demonstrate both surface water and groundwater results. This information could be provided in a more direct method even though is provided in Table 3-4 "Potential for stress based on <i>percent water demand</i> under current and future municipal water demand" and Table 3-5 "Surface water potential for stress based on Tier 1 stress assessment" and explained on page 3-16.	Tables 3-5, 3-6a 3-6b, 3-7a and 3-7b now contain both percent water demand and stress category	Table 3-5	MOE Minor Supplemental Comment
3	Consider revising Tables 3-6 "Groundwater potential for stress (Average Annual Conditions)" and 3-7 "Groundwater potential for stress (Maximum Monthly Conditions)" to change the column heading from "Potential for Stress" to "Percent Water Demand" and to add an additional column to include the stress category assigned based on percent water demand value. Although the information required is presented in the AR and meets the legislative requirements, these changes will clarify the AR for the reader and better align the language with the Technical Rules.	Titles are altered from "Potential for Stress" to "Percent Water Demand" and an additional column was added to include the stress category assigned based on percent water demand value in Tables 3-6a 3-6b, 3-7a and 3-7b	Tables 3-6a 3-6b, 3-7a and 3-7b	MOE Minor Supplemental Comment

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4	<p>The statement in section 7.1.4 on page 7-15, "According to Rule 131, activities in vulnerable areas that contribute to drinking water quality issues are deemed significant drinking water threats regardless of assigned vulnerability scores", can be misleading to the reader. It will help clarify the Technical Rules by indicating that this statement only applies to issues in WHPA and IPZ vulnerable areas for systems in the Terms of Reference (ToR). It may also be helpful to indicate that issues are considered moderate drinking water threats when they are linked to a system not identified in the ToR or are located in a HVA/SGRA area.</p>	<p>These clarifications are provided in the AR: According to Rules 114, 115, 131 and 141, activities or conditions that contribute to drinking water quality issues (known to be partially or wholly due to anthropogenic sources), are deemed significant drinking water threats regardless of assigned vulnerability scores. This applies to intake protection zones and wellhead protection areas only, for drinking water systems identified in the Source Protection Area Terms of Reference. Further, issues in HVAs or SGRAs or those linked to a system not identified in the Terms of Reference may lead to the identification of moderate drinking water threats (not significant threats). Systems not identified in the Terms of Reference may be those included in the source protection planning process through municipal council resolution or by the Minister (MOE).</p>	<p>Section 7.1.4, Section 5.2. Appendix 2: Section Summary 5: Impact of Identifying an Issue, Section Summary 7: Threats Arising from Issues.</p>	<p>MOE Minor Supplemental Comment and MOE Early notification no. 4</p>
5	<p>Consider improving the explanations on the processes for threats and risk assessment, including how the approaches changed over time and how that transitions to current approaches. The report contains protocols for threats and risk assessment that are out-of-date and not consistent with the Technical Rules. Some additional text to describe how this analysis has transitioned to align with the Technical Rules and to generate the current AR results will make it easier for the reader to understand the current threats and risk assessment process</p>	<p>In Section 7, the vulnerability scoring approach and the issues based approach are further clarified. A brief description of the events based approach is provided. Links to the MOE Tables of Threats and MOE Tables of Circumstances are provided. It is clarified that the threats and risk assessment was done according to the latest Technical Rules, the Clean Water Act and its regulations, as well as the TSR local guidance document.</p>	<p>Sections 7.1.1 and 7.1.5</p>	<p>MOE Minor Supplemental Comment</p>

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6	Consider the following typographical changes: a. Change the Director's title from "Director of Source Protection Planning" to "Director of Source Protection Programs Branch" on page 1-17. b. Change the description of consultation phases for the draft proposed and proposed from future to past tense in AR Section 1.10. c. Update sentence "Minor changes may be incorporated into report prior to posting the draft proposed Assessment Report for consultation" on page 3-14.	The typographical changes are made in the AR.	Sections 1.10, 3.3.5	MOE Minor Supplemental Comment
7	Issues analysis update: Thamesford issue nitrate to be removed	Nitrate was previously identified in the proposed AR as an issue in the raw (untreated) water of the Thamesford water wells. From the March 2011 Oxford County issues report update for the Thamesford system, nitrate levels in the wells have been decreasing, and since the fall of 2009, they have been consistently below the half MAC (Maximum Acceptable Concentration, for drinking water). The MAC is 10 mg/L for nitrate. It was recommended by Oxford County to remove nitrates as an issue for Thamesford, and this is now reflected in the amended AR.	Section 5.4: Table 5-5, Section 5.5: Table 5-6, Section 5.6: Table 5-7, Thamesford System Summary: Table 1, Section Summary 5: Table 1, Appendix 9 (flagged parameters), Appendix 12 (list of references).	County of Oxford
8	Update AR to include information on the new well in the Dorchester system (Well 3PW-8).	The new Dorchester well 3PW-8 was put into service late summer 2010. The count of wells for the Dorchester system is updated. Pumping rate information (max. annual, avg annual, avg monthly), well screen depths, and source (GUDI) are provided in the current AR. Limited raw water quality data is collected, but for the other municipal wells of the same system, no drinking water quality issues were detected. Note: the planned Oxford wells at Mount Elgin ('Bond' well) and Woodstock ('Graydon' well) are yet to be put into service.	Sections 2.3.4 (Table 2-4), 4.3.4, 4.3.5, Section 5: Table 5-6, Dorchester system summary: system overview, issues text and data gaps, Appendix 9	Municipality of Middlesex Centre

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9	Vulnerability score changes due to modified AVI and SWAT scores and other minor adjustments for Oxford well systems WHPA.	The Aquifer Vulnerability Index (AVI) for most Oxford wells (except Ingersoll and Woodstock, which were assessed using SWAT) were modified to reflect the classification thresholds as specified by the Technical Rules. The previous high vulnerability AVI threshold was increased from 24 to 'less than 30', and the medium vulnerability AVI threshold corresponds to 'greater than or equal to 30 and less than or equal to 80'. The other minor adjustments made to the SWAT and AVI vulnerability mapping included filling minor gaps or misalignments, smoothing areas between different vulnerability categories and removing suspect erroneous well records. There are minor changes in mapping and no changes to vulnerability scoring except for the Ingersoll WHPA-C. In this WHPA, the vulnerability scores were previously 2, 4 and 6; they are now 2 and 6 only. Updated vulnerability and risk assessment identified an additional property as a significant threat and a letter was sent to the landowner. The count of significant threat locations for the Ingersoll WHPA is updated to total of 41 (previously 40).	Section 4.3.1: Table 4-1, Section 4: Table 4-4, Section 7: Table 7-6. applicable System Summaries figures, Oxford system maps in Appendix 1, Section 7: Table 7-19. Section summary 7: Table 3, and Ingersoll System Summary Table 2	County of Oxford
10	Minor editorial	Minor editorial changes to be made throughout the AR to reflect that the current AR is the 'Amended Proposed', pagination, spellings, etc.	Throughout the AR	CA Staff