





**APPENDIX B**  
**DRAFT Version 1.1 – September 28, 2007**

GENERAL TOPIC	Suggested Points of Review (Stage 2 PSI and DSI)	Reference	Note 1	Note 2
<p><b>METHODOLOGY AND DATA COLLECTION</b></p> <p><i>Groundwater</i></p>	<p>12. Has the investigator:</p> <ul style="list-style-type: none"> <li>a. presented the rationale for the sampling and testing plan as it relates to investigation of each APEC associated PCOCs, pathways and potential receptors;</li> <li>b. identified and assessed potential preferential pathways;</li> <li>c. carried out field sampling procedures according to Ministry guidelines where available and, if modified, presented justification for such modifications;</li> <li>d. documented that sample collection, handling, preservation, storage methods and holding times were suitable for the PCOCs;</li> <li>e. detailed the procedures used to collect, record, confirm and verify the data;</li> <li>f. identified how test holes and sample locations were located in the field, provided coordinates for the location of each borehole, monitoring well, testpit, surface water, sediment, soil vapour and/or surficial soil sample locations, and shown them on a scaled site plan; and,</li> <li>g. provided rationale for choosing the area used to represent background conditions, if attempting to establish background conditions?</li> </ul> <p>13. Has the investigator provided:</p> <ul style="list-style-type: none"> <li>a. detailed field methodology descriptions to provide confidence in the results of field sampling;</li> <li>b. identified and discussed any limitations of field sampling methodology; and</li> <li>c. a summary of what was done with drill cuttings and monitoring well development/purge water?</li> </ul> <p>14. For investigation of groundwater, has the investigator:</p> <ul style="list-style-type: none"> <li>a. documented development procedures for monitoring wells, and field observations and measurements during development;</li> <li>b. documented purging procedures and field observations and measurements; and,</li> <li>c. documented sample collection, preservation, storage and shipping procedures?</li> </ul> <p>15. For investigation of groundwater, has the investigator considered and discussed the influence of tides, weather conditions and seasonal influences in their sampling plan and the interpretation of results?</p>			

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<b>INTERPRETATION</b> <i>Previous Reports</i>	16. If previous studies have been completed for the property: <ol style="list-style-type: none"> <li>a. have historic data been compared to current applicable environmental quality standards;</li> <li>b. have the data been summarized and presented in the report, and incorporated into the overall interpretation of conditions; and</li> <li>c. if not, has the investigator given reasons for excluding data from previous studies?</li> </ol>			
<i>Stratigraphy and Hydrogeology</i>	17. Has the investigator provided: <ol style="list-style-type: none"> <li>a. an interpretation and description of the soil stratigraphy encountered at the property during the subsurface investigations;</li> <li>b. an interpretation of the groundwater flow system at the site been developed, considering the potential for multiple aquifer and aquitard zones, vertical flow components , and including any limitations that may exist with respect to the hydrogeologic data?</li> </ol> 18. In doing so, have or has: <ol style="list-style-type: none"> <li>a. all aquifers and aquitards present been identified and assessed;</li> <li>b. ground water fluctuation been considered or documented as a result of seasonal or tidal effects;</li> <li>c. groundwater flow direction and gradient in the saturated zone(s) been calculated;</li> <li>d. hydraulic conductivity been calculated by completing site specific hydraulic testing and have calculations and details been provided, if collection of this data is warranted; and</li> <li>e. groundwater flow velocity and travel time to potential receptors been estimated, if those pathways are being considered closed for purposes of establishing applicable standards?</li> </ol>			



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<i>Figures, Drawings and Tables</i>	<p>23. Has the investigator provided:</p> <ul style="list-style-type: none"> <li>a. a site plan showing interpreted groundwater contours in each hydrostatigrable zone or aquifer of relevance;</li> <li>b. a scaled site plan or plans showing a graphical representation of the distribution or limits of contaminants for each media, considering all new and previously collected data for onsite and offsite properties;</li> <li>c. prepared scaled cross sections (longitudinal and transverse with respect to groundwater flow) that provide an interpretation of the stratigraphy and potentiometric heads, show the locations of test holes and limits of any excavations, and provide the groundwater and soil analytical results along the cross sections for the site and adjacent properties;</li> <li>d. tabulated analytical results for each PCOC and compared these to appropriate environmental quality standards and criteria for each media?</li> </ul>	CSSAF	M  M  M  M	
QA/QC	<p>24. Has the investigator:</p> <ul style="list-style-type: none"> <li>a. evaluated the potential for systematic bias during the sampling procedure, including collection, preparation and analysis by describing the quality assurance/quality control (QA/QC) program undertaken;</li> <li>b. undertaken a QA/QC program to verify data tables in the report with original analytical records;</li> <li>c. reviewed and commented on sample integrity when received by the laboratory, and sample holding times prior to testing including, for samples that undergo extraction in the laboratory, holding times both before and after extraction;</li> <li>d. stated the data quality objectives, calculated a relative percent difference for sample pairs or relative standard deviation for multiple replicate samples, and evaluated results in terms of the data quality objectives;</li> <li>e. provided a satisfactory explanation where QA/QC data do not meet the data quality objectives including implications to interpretation of the environmental quality data;</li> <li>f. provided clear assertion of reliability of all data that is significant to the study's conclusions based on QA/QC; and,</li> <li>g. documented any corrective action taken if QA/QC reveals significant bias or high imprecision?</li> </ul>			

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<b>CONCLUSIONS</b>	<p>25. Has the investigator:</p> <ul style="list-style-type: none"> <li>a. provided clear conclusions as to the absence or presence of contamination at each of the APECs for the appropriate PCOCs and media, with respect to both the CSR and the HWR;</li> <li>b. provided clear conclusions as to whether delineation of contamination was achieved at each identified contaminated area for each COC in each media affected;</li> <li>c. provided clear conclusions as to the absence or presence of potential migration pathways;</li> <li>d. identified limitations, including APECs or preferential pathways not directly investigated and rationale for why;</li> <li>e. identified which APEC are considered AECs and provided rationale for those that were not considered AECs; and,</li> <li>f. clearly stated whether or not further investigation is needed at any of the AECs?</li> </ul> <p>26. Has the investigator made clear conclusions as to whether or not off-site migration of contaminants is or is likely occurring and, if so, whether a notice of offsite migration has been made?</p>			<p>M</p> <p>M</p> <p>M</p> <p>M</p> <p>M</p> <p>M</p> <p>M</p>
<b>REFERENCES</b>	<p>27. Has the investigator referenced:</p> <ul style="list-style-type: none"> <li>a. all data sources, previous studies and other sources that contributed information to the study; and</li> <li>b. any technical literature that provides additional detail on procedures used in the study?</li> </ul>			
<b>APPENDICES</b>	<p>28. Has the investigator provided:</p> <ul style="list-style-type: none"> <li>a. copies of analytical laboratory reports, in printed form for data used as part of the investigation, including any historical data relied on;</li> <li>b. copies of all drill logs and test pit logs for the investigation, including from any historical data relied on;</li> <li>c. reports of monitoring data collected from monitoring wells and/or soil vapour probes (e.g. depth to water, vapour concentrations, liquid phase hydrocarbon thickness etc.);</li> <li>d. hydrogeological data and supporting documents (i.e. slug test response data, pump test data, modeling etc.); and,</li> <li>e. copies of previous environmental reports (or pertinent sections) that have been relied on?</li> </ul>		<p>M</p> <p>M</p> <p>M</p> <p>M</p> <p>M</p>	

**Notes**

1. M signifies these points are a mandatory requirement of the site investigator's report.

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2. M signifies these points must be commented on by the CSAP in the Summary of Site Conditions.
3. This guideline has been developed based upon ministry regulations, procedures, policies and guidelines in effect at the time of their preparation. The CSAP should always check the Ministry's website to identify if any new information is in effect.