Brian Luinstra's Comments – Goderich Intake Surface Water Vulnerability Addendum: Numerical Modeling June 22, 2009

Overall Questions

- 1. Need to document the rationale for extending the in-Lake IPZ-2 to the shoreline, i.e. the zone of interaction between the open water and the shoreline due to wave activity. Just needs a paragraph explaining this.
- 2. Could we not identify the wave breaking limit based on the winds and the bathymetry so that we can provide that information to the town? It would also justify my point above in (2).
- 3. It is somewhat disappointing to see the discrepancies between the modeled and measured currents, but I appreciate that it is documented as well as it is and, regardless, agree with the overall conclusion that this work meets or exceeds what is expected from the MOE.
- 4. Spelling/typo on page 6, last paragraph, line 3 "re" would be "were"
- 5. Good to see that at least current directions are correlating well (modeled versus measured)
- 6. Just a question, how do we account for winter Ice cover in these models (or do we?)? It could be interesting because I think the intake would be wholly within the ice covered zone in the winter months. Might be worth adding a recommendation to try and develop some year-round current monitoring for future modeling efforts.
- 7. Future monitoring of currents should be a recommendation. The 2003 data was so useful, why not at least recommend more?
- 8. On Figure 3.1 it would be nice to have a correlation coefficient determined
- 9. Steady state modeling in the Lake worries me a bit, but I suppose this will be dealt with in any IPZ-3 work we will do in the future.
- 10. Cold we include a small section with some recommendations? A lot of the limitations of the model listed in Section 3.5 hint on some recommendations and I think it would be worth it.
- 11. IPZ 1 and IPZ -2 inland portions are not consistent with previous work. IPZ-1 should be extended only inland as far as the regulated limit, IPZ-2 we had agreed to include the entire stormsewer-shed.
- 12. The Zone vulnerability score is appropriate, I would argue that the Source Vulnerability Modifying Factor should be 0.7 rather than 0.6 This is a shallow, near-shore intake, located in a partially restricted flow zone that makes it more vulnerable than other Lake Huron intakes in that it is more susceptible to sediment-derived issues and has less open-exchange with the open waters of the Lake. I view it as, under certain wind conditions, operating almost like a protected lagoon-type system. Any contamination in that area of dead water would not be flushed out as readily as in other intakes.
- 13. We need to remove references to guidance modules and replace them with reference to the Technical Rules.