

Memo

To: Mani Seradj, City of Hamilton
From: Ron Scheckenberger
Date: May 23, 2019
File: TPP188127
cc: Dale Klodnicki, Lance Lumbard
Re: **Chedoke Creek Project, Wood Commentary on SLR Peer Review Comments, City of Hamilton**

Thank you for providing the Peer Review Report for the Chedoke Creek project (ref. SLR, May 15, 2019). The Wood Team has reviewed the information as provided and offers the following for your consideration. As you indicated, several of the comments, while valid with a more fulsome timeline and budget, could not be addressed accordingly. We look forward to discussing these comments with City staff at your convenience.

1. General: Many of the comments regarding risk assessment and determining impacts attributable to the Main-King (M-K) CSO overflow event relative to other confounding factors and/or comparison to similar reference streams was not within the scope of work.
2. Section 2.2: Discussion of differing conditions upstream versus downstream of the M-K CSO suggests a lack of understanding by the review of the environmental setting; it would have been good to have a similar stream with permitted CSO discharge that had not experienced a similar event, to provide a suitable reference area, but this would likely have been very difficult to match Chedoke Creek conditions (and nearly impossible within the approved project timelines).
3. Section 2.2, Paragraph 2: The document *Guidelines for Identifying, Assessing and Managing Contaminated Sediment in Ontario: An Integrated Approach* could be utilized to provide the decision framework for handling the Chedoke Creek sediments. However, the scope was specific to addressing the sediments that were deposited specifically by the spill event, not a broad assessment of in-situ sediments or an investigation of potential contamination that may have been derived from any number of sources.
4. Section 2.2, Paragraph 3: The Wood Team considered that it was not possible to distinguish or characterize pre/active/or post biotic/abiotic conditions within the creek other than water quality since there is limited baseline ecological or chemical characterization. Instead, Wood focused on the available long-term water quality data and used that as a proxy for the other conditions.



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5. Section 2.2, Paragraph 4: No suitable reference site was available and certainly not one that had been impacted previously similar to Chedoke Creek. Wood therefore estimated what was discharged during the spill and this was used as a direct quantification of new impacts from the spill event.
6. Section 2.2, Paragraph 5, Bullet 5: This is a difficult argument to make with any specificity to the spill-derived sediments. The site was already likely contaminated prior to the spill so any attempt to assess using weight-of-evidence may indicate that the sediments could be high risk (or not) but differentiating pre vs post spill event sediment would not be addressed by this approach.
7. Section 3.1, Paragraph 3: This could be performed but was not part of scope. Wood could add a citation here.
8. Section 3.1: SLR states potential COPC were not vertically delineated; however, Figures 3-3 through 3-5 show lower, mid and surface sample results for these parameters and differences among these strata are discussed in Section 3 of the report. Further, SLR suggests additional sediment analysis (e.g., toxicity tests) could have been conducted – this is true, but was not within the approved scope or budget.
9. Section 3.2, Paragraph 2: Again, it is not possible to distinguish pre-spill benthic invertebrate conditions from post-spill benthic invertebrate conditions so Wood did not quantify the impacts to benthic invertebrates from the spill event.
10. Section 3.2: Adding a discussion regarding expected BIC taxa typical of an urban stream would provide more context for comparison to existing conditions; however, without pre-overflow (or suitable reference area) BIC data for comparison to the current BIC, it is difficult to evaluate potential effects associated with the sediment contamination within the creek (as noted throughout the report).
11. Section 3.3, Paragraph 4: No conclusions made because of limited data and inability to distinguish impacts that may have caused changes in fish population prior to spill event.
12. Section 3.3: The fish community indicator metrics were developed to provide a general indicator of health, as indicated in the report and discussed with City of Hamilton. There are data limitations with regard to inconsistent effort (electrofishing seconds) and the report indicates subsequent monitoring would show further changes in community and improve data interpretation (also noted by SLR). Additional fish indicators may provide further interpretation using the existing data set, as noted by SLR.
13. Section 3.4: Clearer discussion regarding observed changes in habitat type and habitat-specific influences to the BIC and fish community may provide additional insight, as noted by SLR.
14. Section 3.5, Paragraph 1: This was the best available data that existed for pre, during, and post spill. Wood could add some additional supporting information stating the objective of water quality analysis to clarify.

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15. Section 4.1, Paragraph 2: Chedoke Creek sediments are a mixture of impacts from pre-spill, spill, and post-spill conditions. Wood estimated the loading associated specifically with the spill event and rather than in-situ sediment characteristics which could be from many sources. Wood could perform additional evaluation if requested by the City, or this could become part of a future EA Study.
16. Section 4.1, Paragraph 3: Prior impacts unrelated to the MK CSO spill event could be causing biological impairments. Therefore, Wood focused on mass loading estimated from the spill event.
17. Section 4.1, Paragraph 5: The remedial action plan is based on defining and addressing the material that entered Chedoke Creek due to a discrete event caused by the subject MK CSO spill. There are confounding factors due to other potential sources of long-term non-point-source contamination which were likely ongoing prior to, during, and potentially even after the spill event which make assessing the impacts associated with the event difficult, if not impossible. Some of this material has likely been transported downstream but much of it is also likely still within the creek. Agreed that we could expand the evaluation to incorporate additional assessments of whether the material poses a risk based on the Ontario sediment guidelines. However, the sediments within Chedoke Creek were evaluated using the same PSQG LELs that are used as the basis of evaluation in the sediment guidance document.

Table 1 Comments

- Section 2.1.1: Figures 5-1 through 5-3 showing the 2013 and 2017 aerial imagery are showing different water levels (flow conditions), these show the changes in morphology discussed in the report (e.g., more coarse grained, higher velocity upstream).
- Section 3.2: sample location G-3 is located in an area with higher surface water velocity, typically meaning higher dissolved oxygen concentrations as shallow reaches of creek water are aerated when flowing through coarse substrate (riffles), whereas location G-6 is positioned near the Kay Drage Park bridge in an area of no measurable flow velocities, as such this location is expected to have lower surface water DO. Fig. 3-2 shows a general trend of decreasing DO concentration from upstream to downstream and suggests impaired environmental quality between these locations.

RBS/kf