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Interactive comment on “Organic matter dynamics and stable isotopes for tracing sources of suspended sediment” by Y. Schindler Wildhaber et al.

Anonymous Referee #3

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The contribution by Y. Schindler Wildhaber et al. adds to the literature database with respect to organic matter and sediment tracers. In general, the data results are believable in terms of their dependence on stage and upstream to downstream change. Some questions/concerns: 1. Was grain size correction or sieving a subset of sediments used to compare source and suspended sediments? This will be important as particle size can control signatures when fingerprinting. 2. My primary concern is with the treatment of riverbed sediment. The watershed appears rather steep. How this impacted in-stream deposition of riverbed sediment? Is it expected that riverbed sediments are flushed during one or two or more events? If flow through of sediment is very high and deposition is low, addition of riverbed sediment may not be needed because

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their signature will not change with time and should reflect their source. Longer residence will require assessment of physical changes, which can be corrected with grain size corrections, as well as biotic additions. 3. Also, as the authors state, “5 riverbed sediment samples from the upper most accessible reach of the river”. How were these samples collected? What was the grain size distribution of the samples? Why only 5 samples were taken at the top of the stream? Was this the only deposition zone? Are the riverbed sediments just a subset of the forest soil fraction? What about riverbed sediments lower in the system? Were these considered? 4. The nitrogen isotope value of the riverbed sediments are really low. Is this value reflective of the organic matter or the carbonates? 5. The questions are important because the riverbed end-member puts quite a bit of leverage on the source apportionment results. 6. Table 3 and Fig 6, “sediment” should be “riverbed s” or clearly defined otherwise. 7. Discussion of the significance of results with respect to trout spawning habitat is lacking. The authors state that carbon tracers “indicate an allochthonous source of the organic matter in the SS during the brown trout spawning season.” Then why perform the sediment source apportionment? How the source distribution could further impact spawning?

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