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Interactive comment on "Working backwards from streambed thermal anomalies: hydrogeologic controls on preferential brook trout spawning habitat in a coastal stream" *by* Martin A. Briggs et al.

Martin A. Briggs et al.

mbriggs@usgs.gov

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We warmly thank the Reviewer for the careful attention to our submitted manuscript, for the overall favorable impression of the work, and for the constructive suggestions. Through the combined 3 reviews we have identified several common themes that will improve the clarity and impact of this presentation. In regards to your 4 main points:

1. Our intention with the "working backwards from streambed thermal anomalies" title was to indicate how our work moves beyond measuring water fluxes and dissolved

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chemistry at the streambed interface, and into the source aquifer to develop a physical transport-based understanding of why certain groundwater discharge zones had favorable characteristics for trout spawning. In this case “moving backwards” is from a groundwater discharge flowpath perspective (moving upgradient from the discharge interface), but we realize this meaning is somewhat opaque. We suggest an updated title: “Hydrogeochemical Controls on Brook Trout Spawning Habitat in a Coastal Stream”. This title plays on the strengths of this study, which are to illuminate how local river geomorphology, sediments, and flow groundwater flowpaths interact to generate oxygen-rich interface discharge zones in predictable positions along the reach.

2,3. A large panel will be added to Figure 2 to better show where and when the complimentary chemical, physical, geophysical, and temperature measurements were made for this study. The varied measurement timing will also be better clarified in the main text.

4. A simple reactive flow model could be generated to demonstrate uptake of oxygen around DOC sources (peat lenses) in the streambed, which differs from direct discharge from the mineral soil aquifer at meander bends. However, all three Reviewers commented on the sometimes overwhelming/confusing range of methods used here, and even the inclusion of a simple numerical model may not be a net positive to the manuscript readability. There are other empirical and model-based studies that have shown the relationship of DO uptake around in-situ DOC sources in sediment-water interface media, compared to DOC-poor media, and this referencing will be improved to support our interpretation.

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