Reply to reviewer comments,

Prior to our detailed reply for the comments we which to express our great appreciation to the editor Erwin Zehe, the reviewers Marnik Vanclooster and anonymous reviewer #1. We had found the discussion during the review process very fruitful and encouraging. It improved this paper and helped us to get additional perspectives for the coming publications. All comments were accepted and addressed in both the supplementary material and revised manuscript (highlighted in revised manuscript). Also following the revision process we added Lior Avishai as an author to this manuscript.

Follows our reply to the comment. In addition to the reply to

Reply to Report # 1

Comment: ... a comparision with model results would be of importance for illustrating the representativeness of the measured values. The results of such a model application are shown in the authors' reply and should be added (along with the description) to the supplemental material of this paper. The same is true e.g. for the good correlation between ethanol and DOC. Further, with regard to the discussion of effectiveness of degrading or just transporting the contaminant to deeper parts of the soil …it would be good to have this discussion within the conclusions part of the paper….

Reply: We accept all comments an revised the manuscript and the supplementary material to account for: (a) comparison of the data with a 1D flow and transport model (lines 104 -119) in the supplementary material, (b) correlation between DOC and ethanol concentration in water samples obtained from the vadose zone (lines 125-132 in the supplementary material and in lines 305-315 in the revised manuscript), and (c) revising the conclusion chapter in the manuscript to elaborate on perchlorate degradation VS migration processes (lines 412 –424 in revised manuscript).

Reply to Report # 2, Marnik Vancluster

Comment: Line 165: It does not eliminate, but reduce salinity.

Reply: Accepted. The sentence was revised (Line 165 in the revised manuscript).

Comment: Line 306: DOC (dissolved organic carbon) should by definition be expressed in concentration units. So 2g DOC sounds odd.

Analysis of ethanol and DOC in the water samples from the vadose zone throughout the experiment revealed high correlation between the two. Theoretically, one gram per liter of ethanol is equal to 0.52 gram per liter of soluble carbon. However, in the site, the dissolved carbon compose of ethanol its oxidation products (such as acetate) as well as well other solubale microbial metabolites that can also serve as electron donors . Thus, DOC provide a better knowledge on the availability of electron donor in the soil pore water (lines 305-312 in the revised manuscript).

Comment: Line 326: What is the 50 % referring to? Mass percentage? Volume percentages? I suggest using concentration units.

Reply: Accepted. The definition of 50% volume percentage was added to the manuscript (line 335 in the revised manuscript).

Comment: Revision report: Comment: Line 287. The authors gave a detailed reply on how velocities were calculated in the profile, based on the wetting front appearances at different position in the profile. This information is crucial to understand the hydrodynamics of the system. The calculation procedure should therefore be included. I suggest to include the calculation procedure as supplementary material to the manuscript.

Reply: We accept the comment and add the main features from our reply on velocity calculation to supplementary material (lines 86-102) and relevant notation in the manuscript (lines 263-265 in the revised manuscript ).