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Interactive comment on "Assessing the perturbations of the hydrogeological regime in sloping fens through roads" *by* Fabien Cochand et al.

Anonymous Referee #1

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This manuscript presents an assessment study of the hydrogeological impact of road construction with different drainage designs applied to sloping fens, using combined field and numerical analyses. The study presented is comprehensive, thorough, well-organized, and clear. Among other things, this study presents one of the best examples on how we can combine field and numerical studies in hydrogeological analyses. The conclusions are informative and clear.

As it was stated in the manuscript, comprehensive field tests could be the best to better understand the problems in general. However, they are time-consuming and only a limited number of sites are available to accommodate the tests. The numerical analy-

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Discussion paper

sis, on the other hand, allows us to explore and assess multiple designs with levels of variations relatively easily, yet the validity needs to be carefully checked. The authors compare the field study and numerical results to ensure that the integrated hydrologic simulator is an appropriate and meaningful tool to reproduce the observations made through field tests, and also to evaluate the alternative designs. Based on the comprehensive evaluation of the three drainage designs, the authors concluded that the road construction with L-drain is the most vulnerable in terms of potential soil erosion underneath the roads. I do not see any over-statement in the conclusions drawn, and it seems to be a very useful guideline to be considered by practitioners.

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