



UNIVERSITY OF COPENHAGEN



Challenges for storm water infiltration in cities



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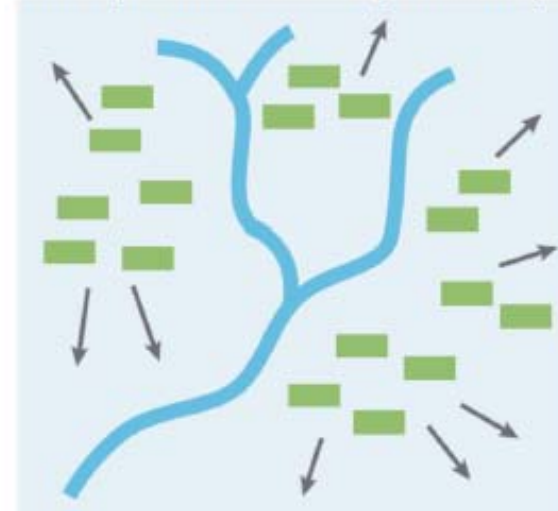
Larger pipes or disconnections?



Sewerbased adaptation



Landscape based adaptation (SUDS)



Disconnection of hard surfaces from sewer system is an alternative way to provide more drainage capacity in a city!

The challenge: Low permeable glacial deposits



Clay tills

low permeability

BUT clay tills range amongst the most heterogeneous sediments

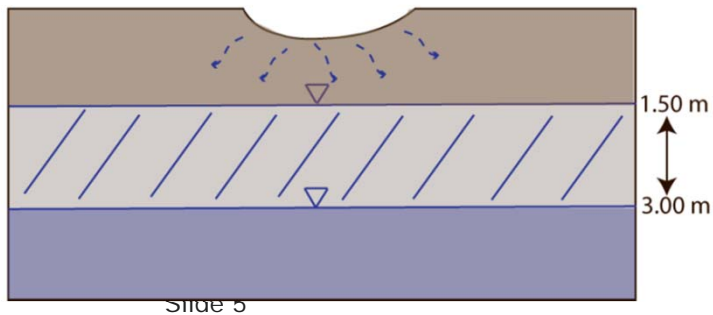
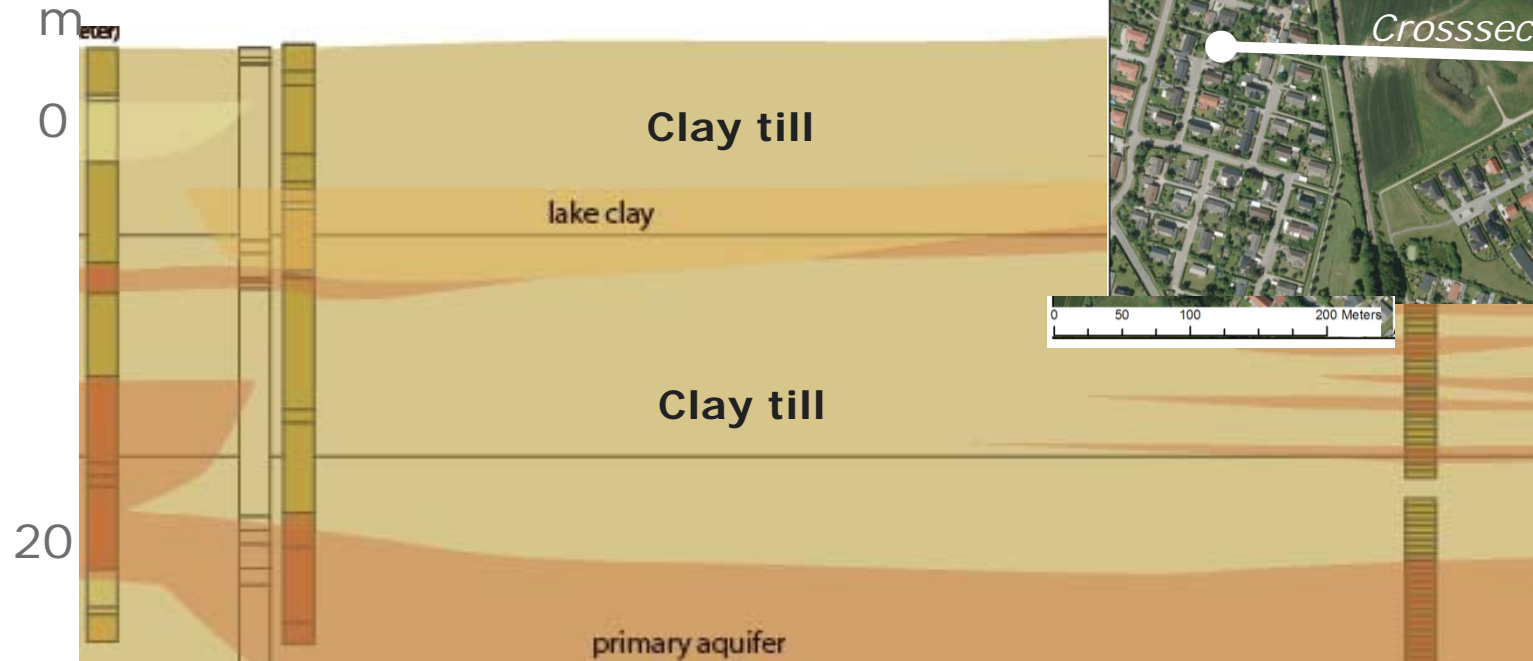
Hydraulic conductivity
From 10^{-5} m/s – 10^{-13} m/s



The study area: Maarslet, Denmark



Maarslet: Regional Geology

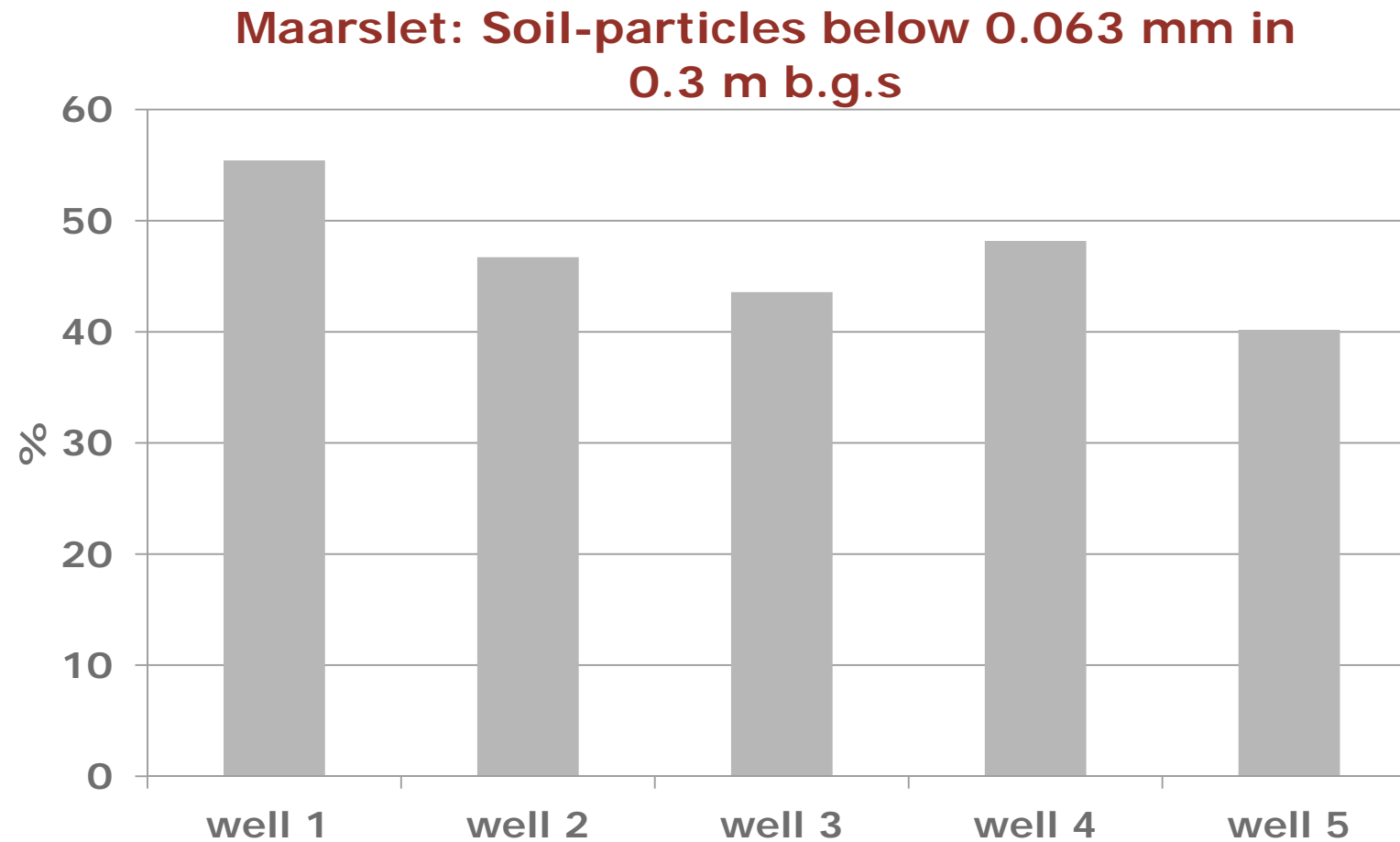


Depth to secondary groundwater-table

GW fluctuations between
1.5 m and 3 m b.g.s



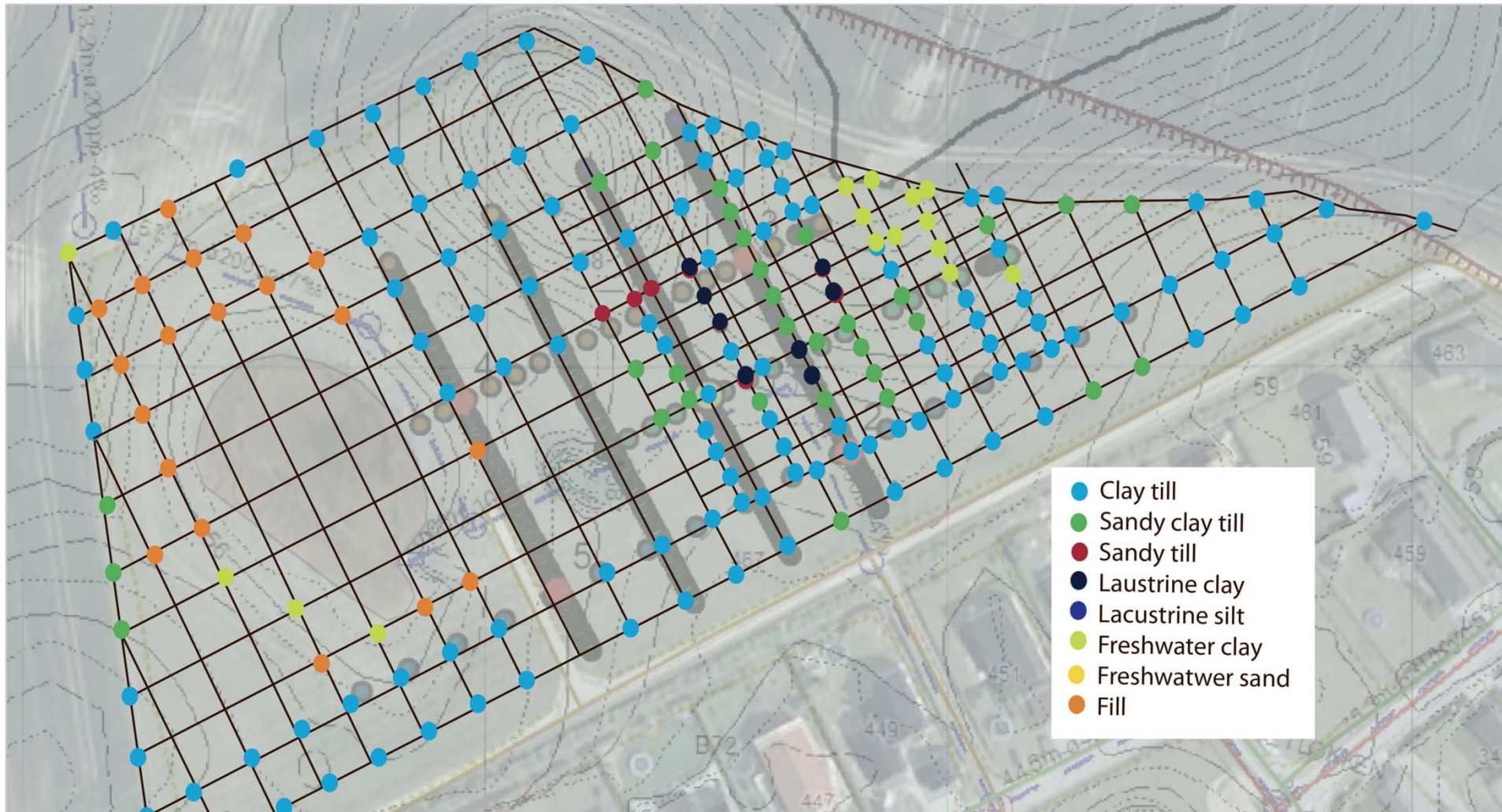
Heterogeneity in clay tills



Spear auger mapping



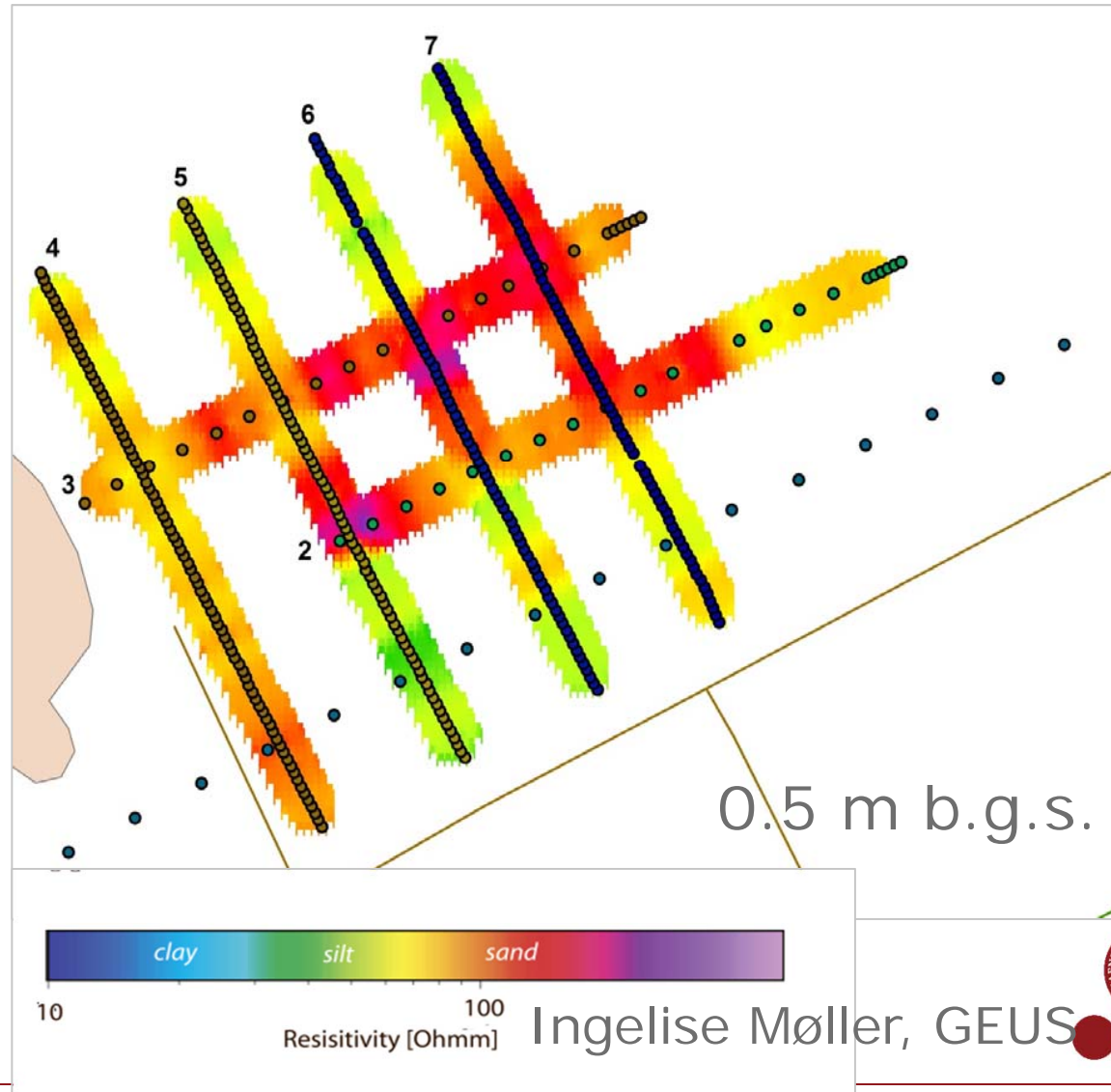
Results of spear auger mapping



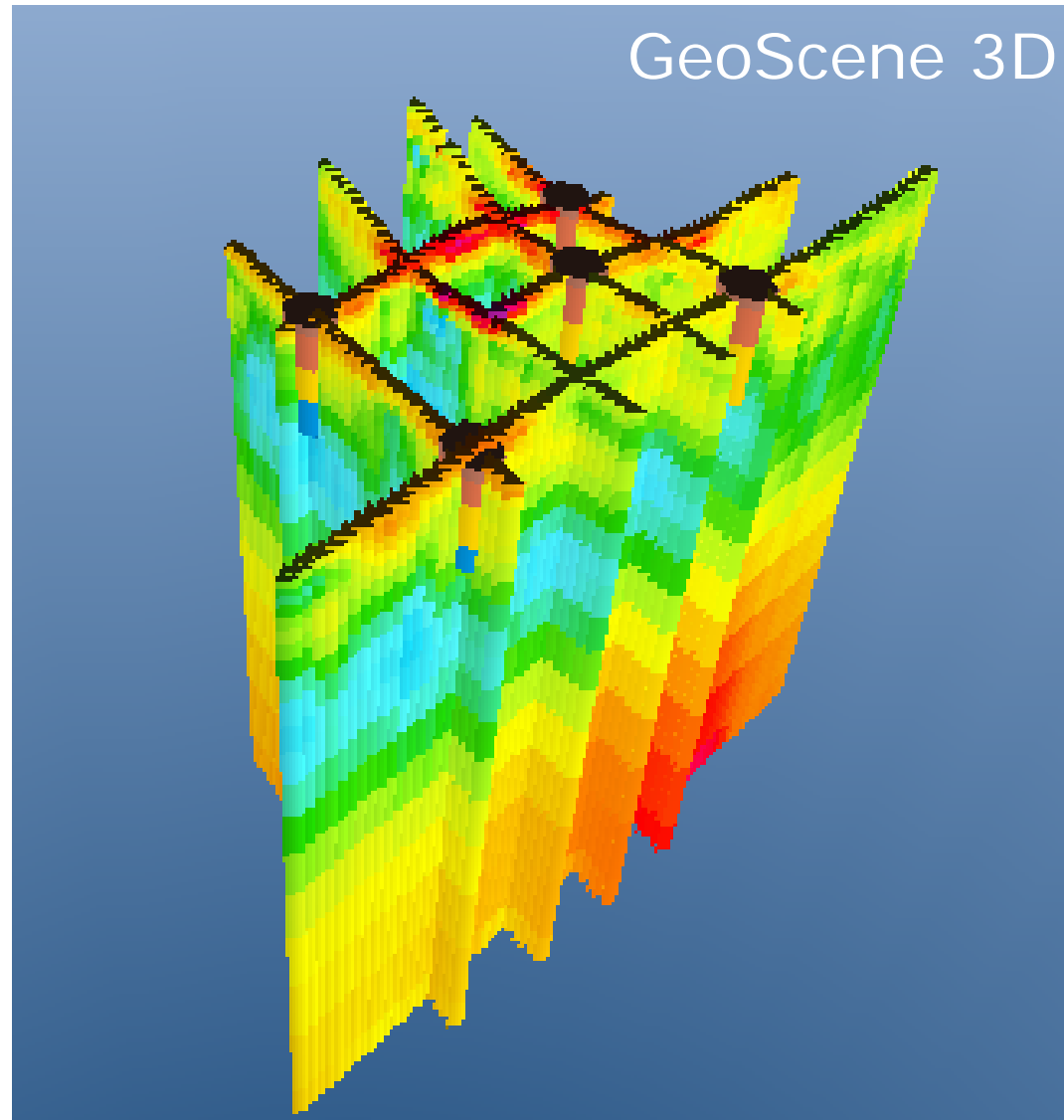
Multi Electrode Profiling (MEP)



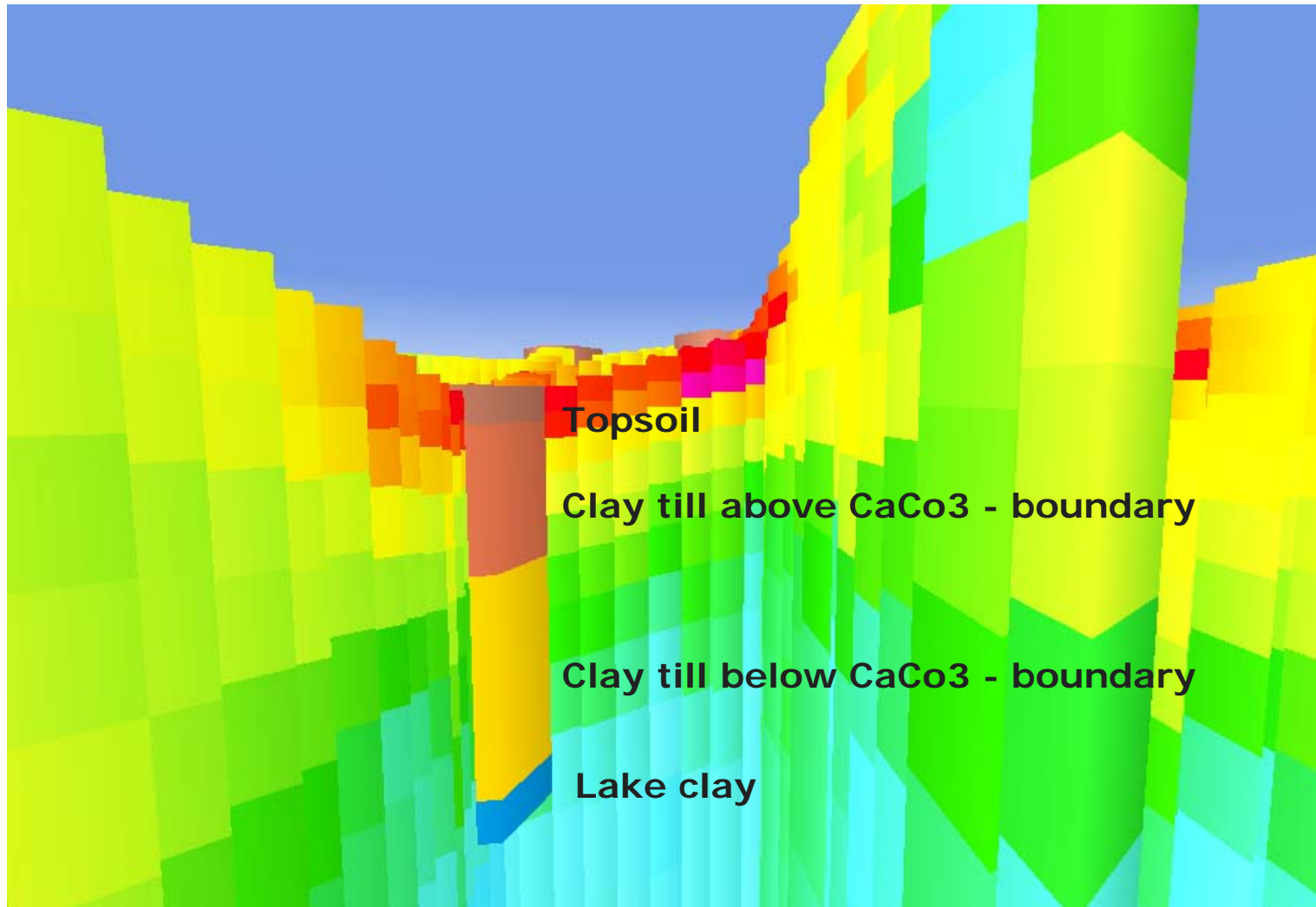
Slide 9



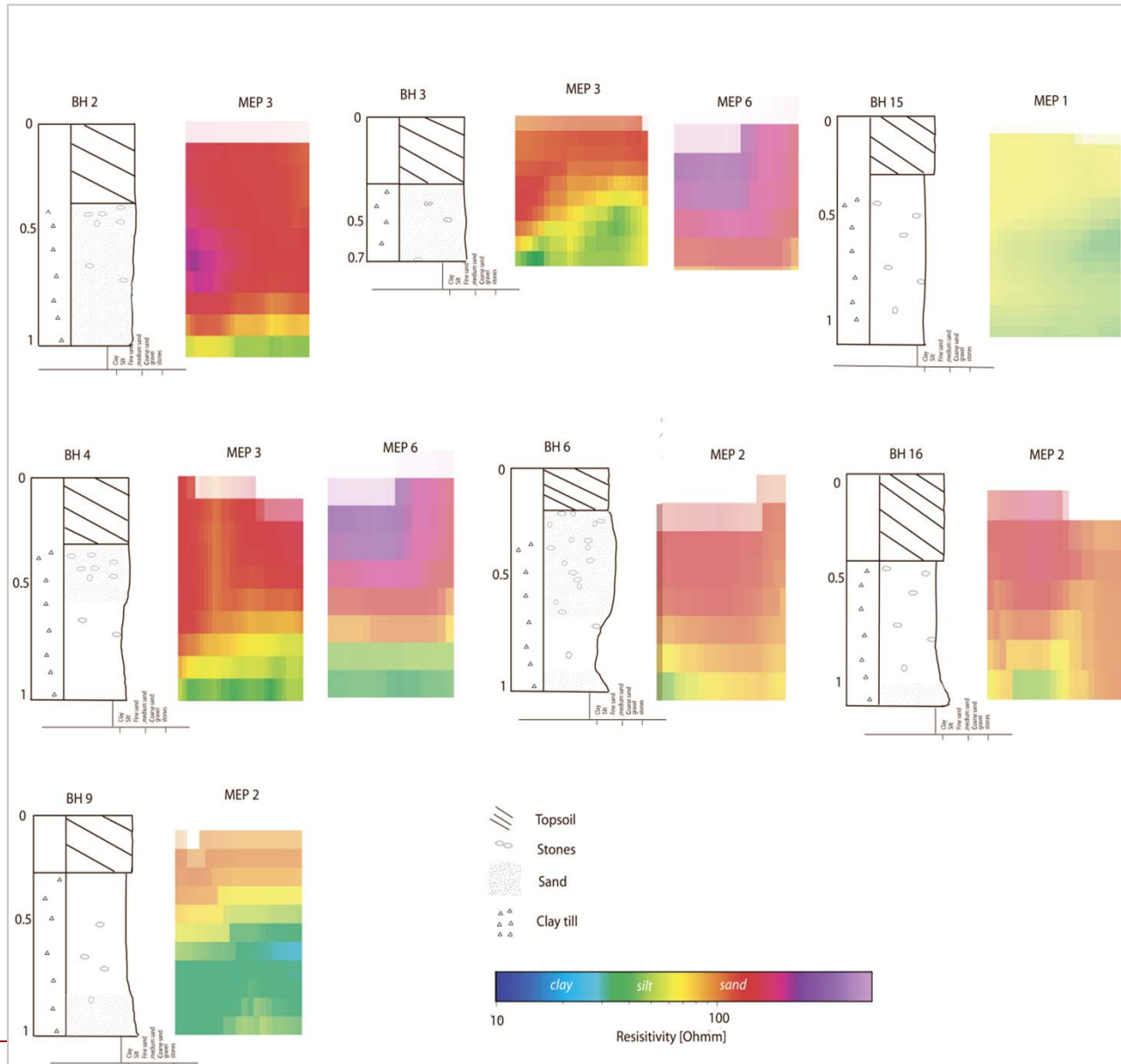
3D-model of the study site



Boreholes and MEP

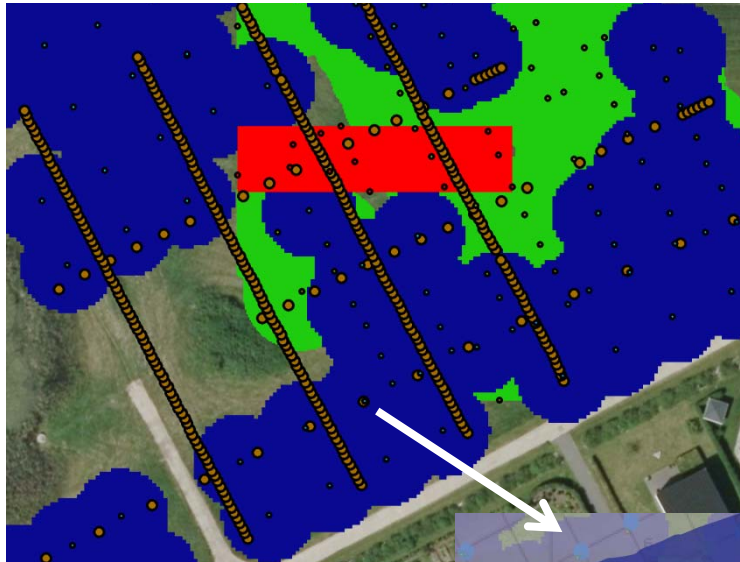


MEP and boreholes – a comparison

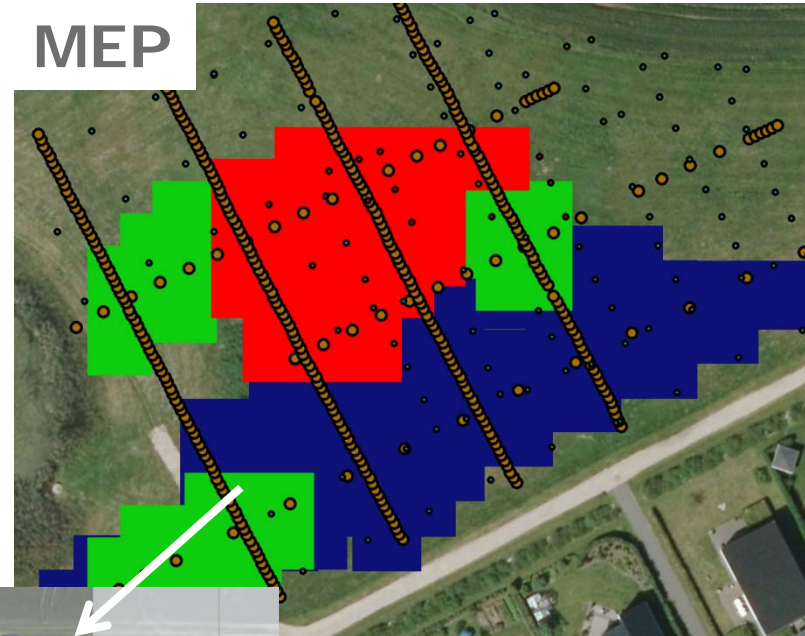


MEP profiling Spear auger mapping

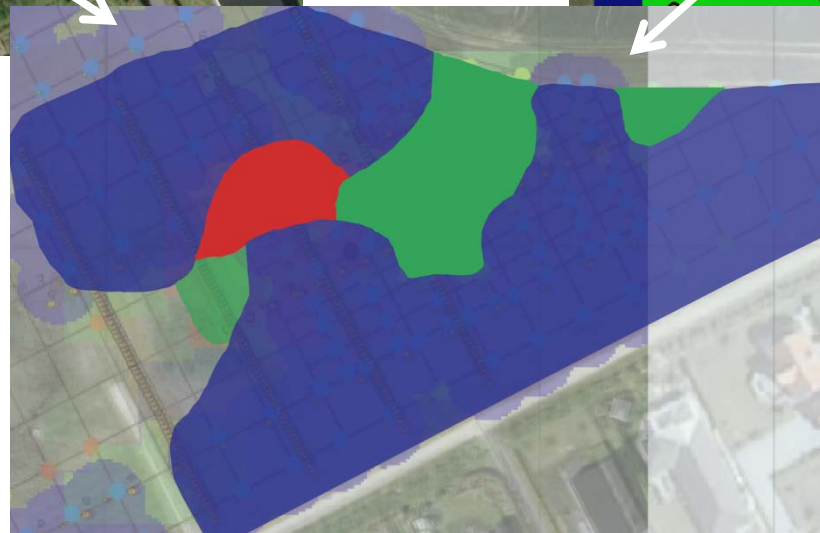
Spear auger mapping



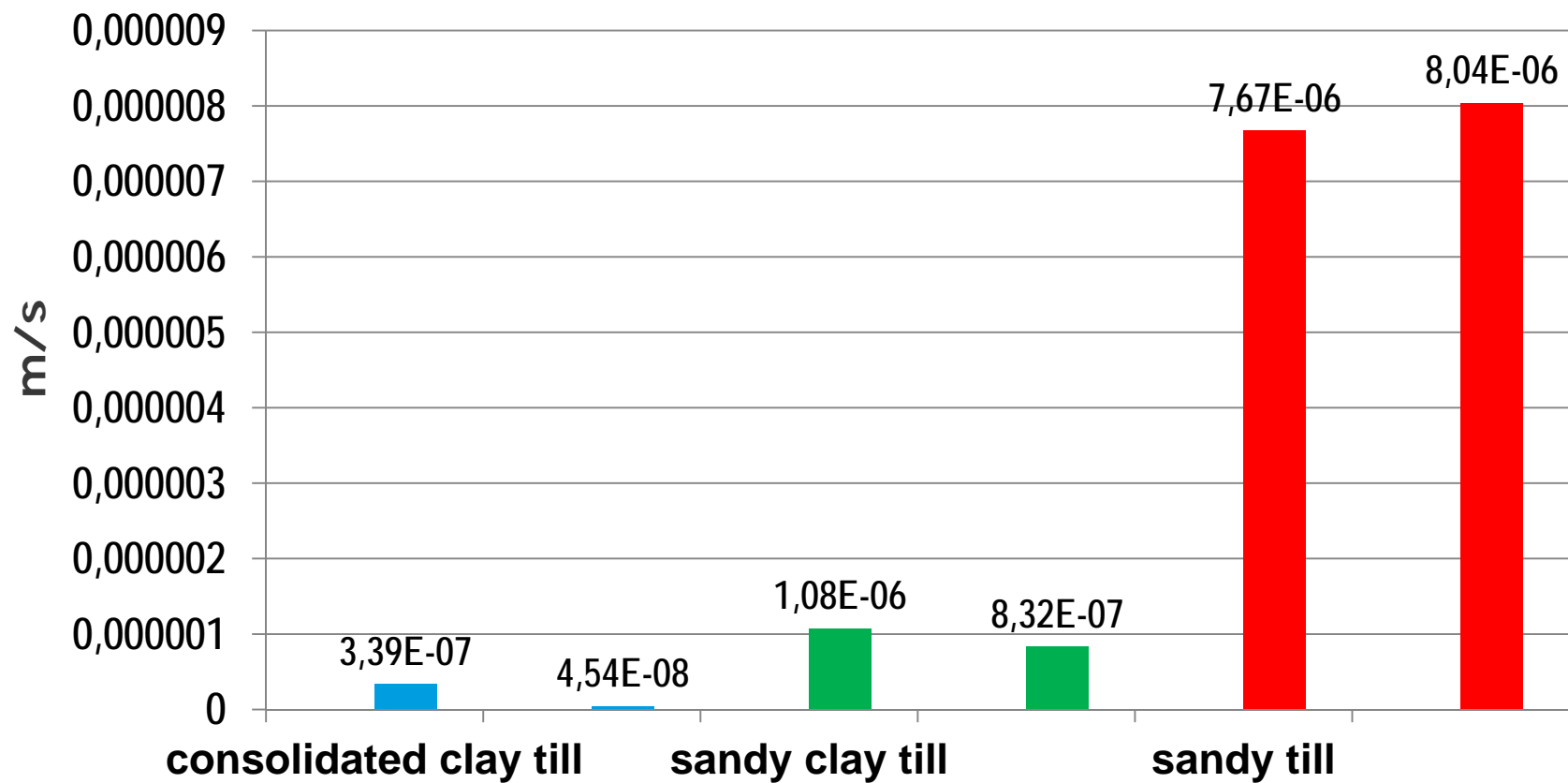
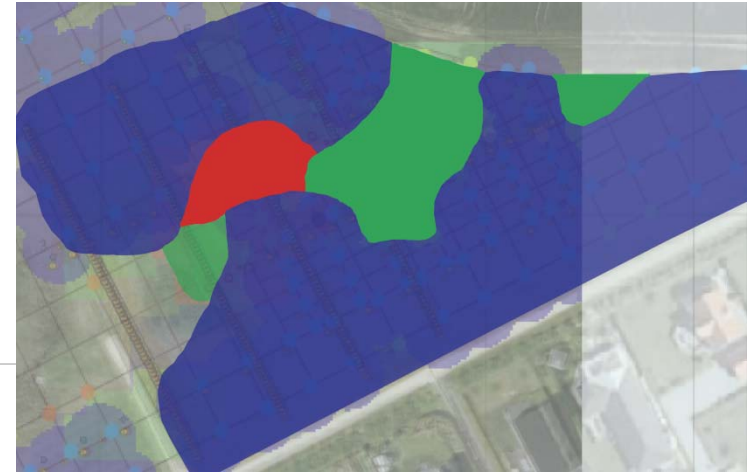
MEP



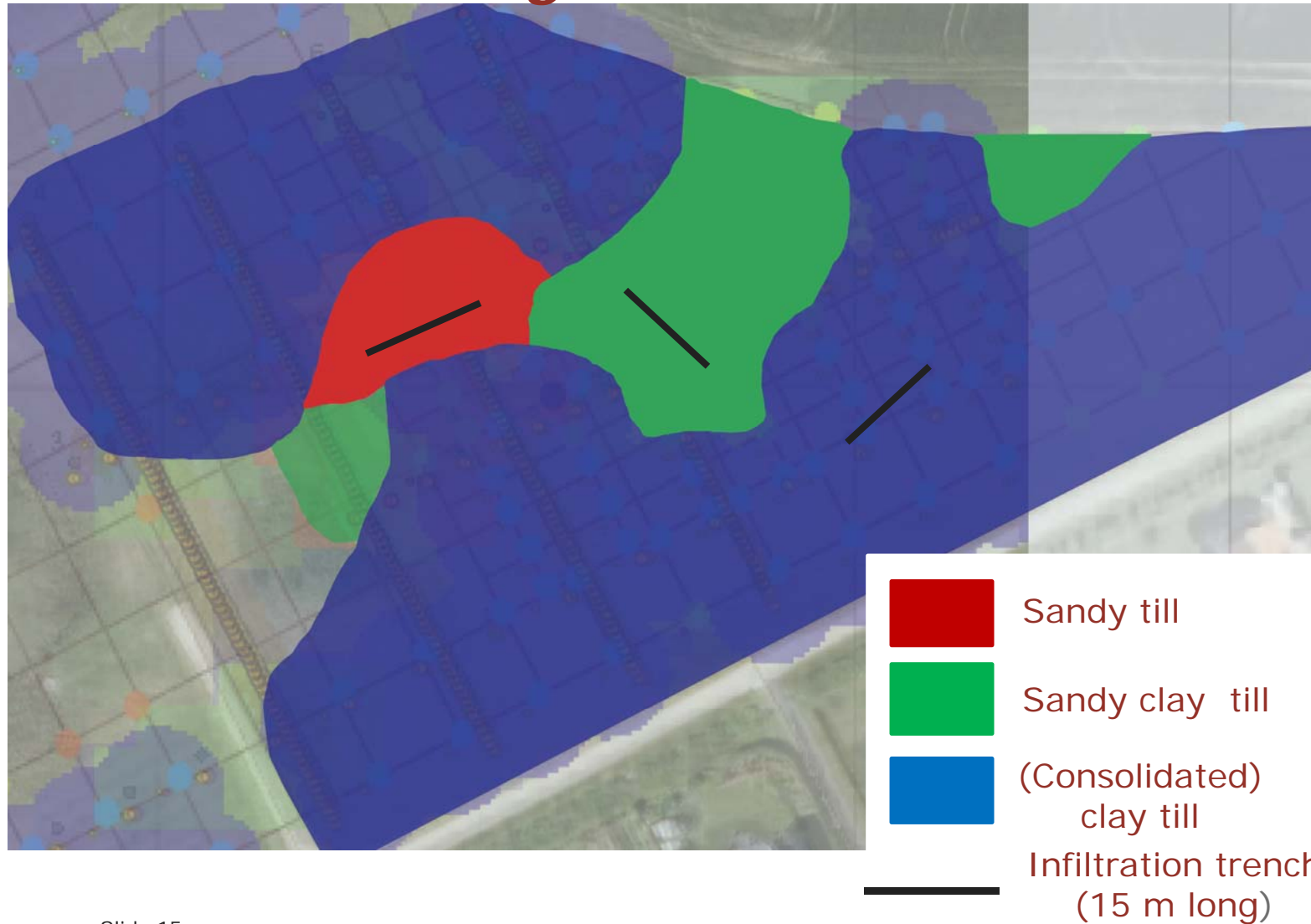
-  Sandy till
-  Sandy clay till
-  (Consolidated) clay till



K_{sat} measured with *Guelph Permeameter*



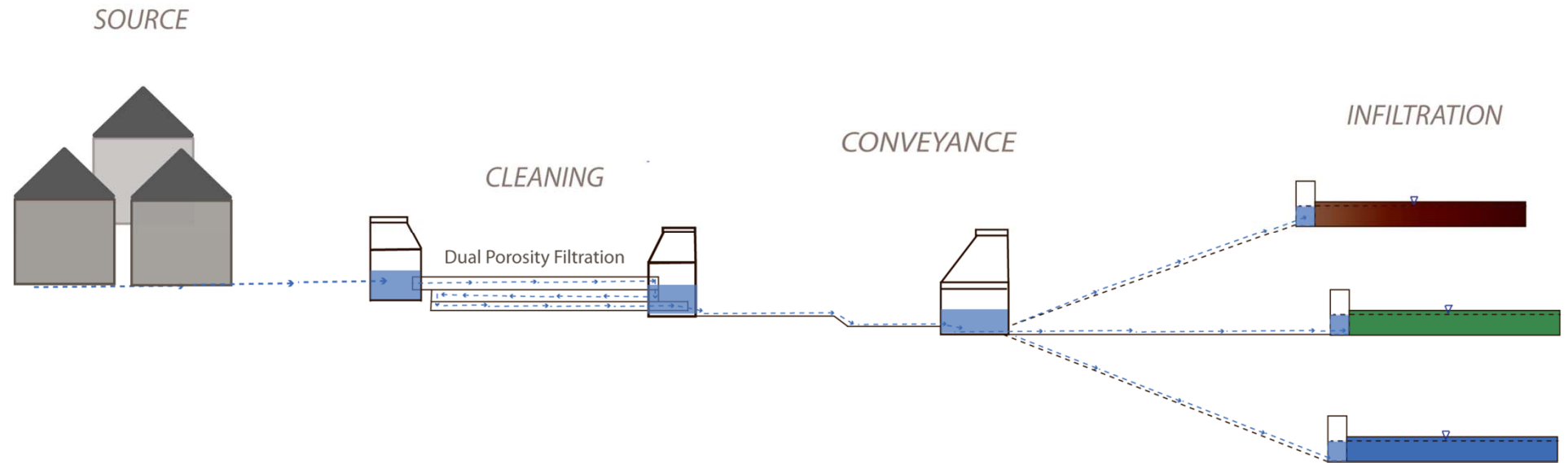
3 areas with different hydraulic properties *generalized*



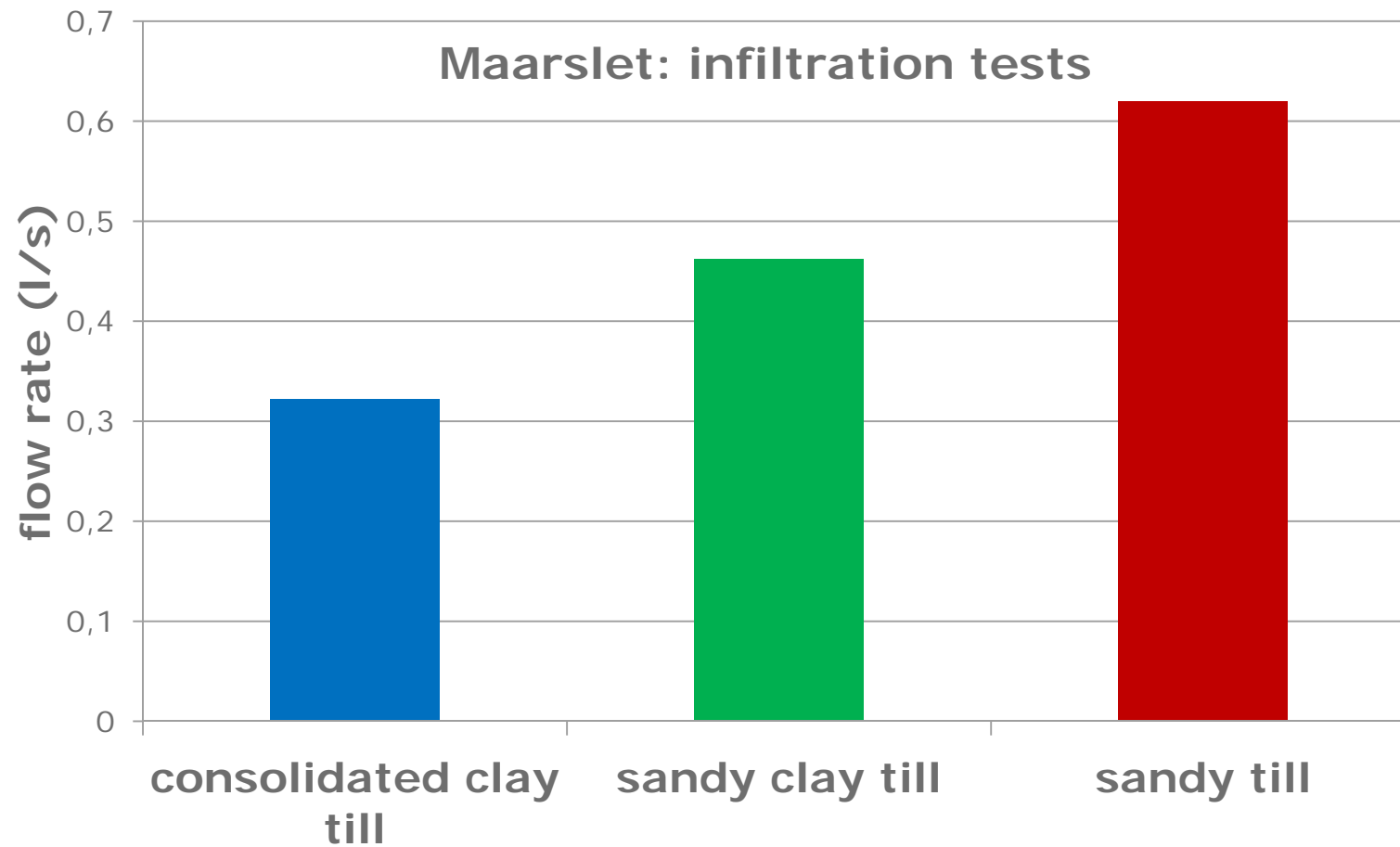
Installation of the infiltration trenches



Treatment and Infiltration of stormwater run-off



Testing the infiltration trenches: First results



Conclusions and Outlook

...the work efficiency of infiltration trenches can be significantly enhanced by the exploration of the site-specific geological variability:

- *Spear auger mapping*
- *MEP*
- *Infiltration tests*

How to transfer findings to dense urban areas?

Parks, verges, merged gardens?

