

Difference of pore water quality in relation to absorptive strength : a case study of Alluvial sediments (GS-AHH-1), Tokyo Lowland

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Ground water can be divided into free water (FW) and bound water (BW) on the basis of absorptive strength of pF4.5. Pore water is obtained from drilled core of 27m length of alluvial sediments in this study. The FW was obtained by a centrifugal separator, and the BW was squeezed out from samples which centrifuged.

The depositional environments of GS-AHH-1 are estimated from the density of sediments and depositional structures. They can be divided into Holocene sediments (0 to 20m deep in core) and Middle to Late Pleistocene deposits (20 to 27m deep in core). The Holocene sediments furthermore can be divided into tidal flat (1.5 to 3m), regressive bay (3 to 13m deep), transgressive bay (13 to 16m deep) and transgressive fluvial (16 to 20m deep) sediments. The top portion of GS-AHH-1 consists of artificial soil. The pore water qualities of 8.4-14.2m depth of transition stage from transgressive to regressive are as follows : 1) pH values of pore water are 9.2-9.5 in FW, and 9.4-9.8 in bound water, 2) EC values are 0.53-1.23 mS/cm in FW, and 0.93-1.54 mS/cm in BW. EC values are higher in BW than FW in all samples, 3) many BW samples exhibit higher concentration of cation, 4) in the case of anion, concentration of Cl and HCO₃ ions are almost the same in FW and BW, PO₄ ions are higher in FW, and SO₄ ions are higher in BW than the other, 5) in the case of sulfur, FW contain only SO₄ ions, but BW contain SO₄ and S₂O₃ ions.