



Artificial factors influencing groundwater flows in the industrial complexes at the coastal area

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Underground structures of the industrial complexes constructed along the coastal areas are vulnerable to the chemical degradations by the sea-water intrusion. Thus it is important to understand how the groundwater system has been altered after the facility construction.

Based on the analysis of the groundwater fluctuations in the monitoring wells, the study area was divided into two sections, the rainfall impact areas and the tidal impact areas. Tidal impact section shows the hydraulic diffusivity (T/S , m^2d^{-1}) ranging from 9.6×10^2 to 4.6×10^4 , with the minimum and maximum values for PZ-8 and PZ-5 affected by the underground structure and the excavation-backfill materials, respectively. Then, the storage coefficient was estimated from the hydraulic diffusivity using the results of single-well pumping tests. Transmissivities (T) ranged from 1.4×10 to $4.7 \times 10^2 \text{ m}^2\text{d}^{-1}$, and the storage coefficients (S) from 0.002 to 0.052. The highest and the lowest transmissivities of PZ-5 and PZ-6 appeared to reflect the hydraulic property of backfill materials used for construction.

Therefore, for hydrogeological characterization of the coastal region with large-scale constructions, field data from various tests should be carefully analyzed considering the impact and the interference of the construction activities, including the distance between underground structures and the monitoring wells, the array of structures, locations and depths of excavation and backfill, hydraulic property of backfill material, etc.

Key word : hydrogeological characterization, coastal area, construction activity, tidal method, hydraulic diffusivity