

The results of groundwater studies and the future plan in the Horonobe coastal area.

IKAWA, Reo^{1*}, MACHIDA, Isao¹, KOSHIGAI, Masaru¹, Seiji Nishizaki², MARUI, Atsunao¹

¹Geological Survey of Japan, AIST, ²NIPPON KOEI CO.,LTD.

On the new utilization methods of underground space development such as geological disposal of high level radioactive waste (HLW) and CO₂ sequestration or carbon capture and storage (CCS), groundwater study is very important to evaluate the underground environments. It is difficult to obtain physical data in sedimentary rock with low permeability, because the groundwater velocity degradation was caused by a rock pressure increase associated with the depth increases. Geochemical data is significant to understand the groundwater flow conditions, groundwater source, and residence time. However, in situ groundwater sampling is very difficult because of the sampling schedule, cost, and technical requirements. In such a case, it is clearly that the application of pore water with the same chemistry as groundwater is efficient to estimate the groundwater environment. In our study, one thousand meter borehole was drilled in the Hamasato area at Horonobe town, Hokkaido prif, and various groundwater studies by the application of pore water were conducted to understand the groundwater hydrology in a coastal area. As the results of these studies, existence of five hydrological units was confirmed in this area and existence of freshwater under the seabed was also found by geophysical exploration. Furthermore, a number of knowledge for the pore water extraction and water chemistry analytical methods were also obtained.

In the presentation, we will report the result of these groundwater studies and introduce the future plan based on the results of studies.

Keywords: Coastal area, Pore water, Deep groundwater, Low permeability sedimentary rock