

SOMWUNG BUNRAYONG : APPROACHES TO REDUCE LAND SUBSIDENCE IN BANGKOK CAUSED BY GROUWDWATER WITHDRAWAL.

THESIS ADVISOR : PROF DR.NIWAT DARANANTANA, 224 PP.

Large quantity of groundwater is abstracted from the Bangkok aquifer and cover the area with or without the service of the surface water from the MWWA. The rapid decline of the Piezometric level of the Bangkok aquifer has resulted in the land subsidence. The subsidence become more serioud especially in the area East of Bangkok. The area surrounding of Ramkamheank Rd., Pattana-karn Rd.' & Srinakarind Rd. has subsided more than 10 centimeters per year. Due to the land subsidence in the said area problems concerning the gravity drain of flooded water, the negative skin frictions and the differential settlement of the building have occurred.

Data concerning amount of daily use of ground water and land subsidence on various district in Bangkok has been obtained from the Mineral Resources Department, The Division of Military Mapping, The MWWA and The Asian Institute of Technology. The well's theory was applied to determine the drawdown of given wells for a given discharge with times and distances varying. The recovery & the artificial recharged equations were also introduced to determine the recovering of the piezometric level after the pump has stopped for a certain period of time. The dropping in the piezometric level as computed by the equations was smaller than the existing one. Such differences may be related to the variation of the permeability value 'K' caused by the subsidence of the aquifer and the over pumping of well with large discharge.

Amendment to the ground water Acts was also recommended. This amendment includes the withdrawal of the license for every well if the MWWA water has has reached that area. The adjustment of the ground waterfee was also suggested.