

Somjit Kitchon, Acting SubLt. 2013: Potential Domestic Water Supply on Small Island: A Case Study of Sukon Island Palien District, Trang Province. Master of Science (Environmental Science), Major Field: Environmental Science, Department of Environmental Science. Thesis Advisor: Adjunct Professor Somjate Jantawat, Ph.D. 138 pages.

Study of potential of domestic water supply for Sukon Island Palien District, Trang Provinces, was carried out by investigation of water demand at present and the future (quantitative and qualitative aspects) for domestic consumption. Quantitative study of water resources was done by determining annual rainfall and evaporation with the U.S. standard rain gauge and the U.S. class A pan respectively. These works were done in the year of 2009. The difference of annual rainfall and evaporation was annual runoff of Sukon Island and monthly runoff was also estimated. Qualitative study of water resources was conducted by taking fourteen water samples from supply sources which included shallow pond, raw water, water supply and spring water. Each supply source was taken from four locations except spring water which was taken from two locations and fourteen water samples were collected at one time. Each water sample was taken at four times in 2009 (dry and rainy season). These water samples were analyzed for physical and chemical qualities and fourteen aspects of water quality were determined and followed the directions of APHA, AHW, and WEF (2005). All analyzed data were compared with standard qualities of water established by nation, international organizations and specific specialist.

From this study, it was found that annual runoff of Sukon Island was 1,299.91 millimeters (18.2 million cubic meters per year) which was 41.03 percent of annual rainfall. Total runoff could meet water demand of Sukon Island in 2027 and was classified as risky condition because no runoff in the dry season. For water quality, it was found that nine water qualities exceeded standard qualities of water in dry season while ten water qualities exceeded standard qualities of water in the rainy and was classified as warning state. In dry season, spring water was the poorest quality and shallow pond was the best quality but in rainy season, spring water was the best one while public water supply was the poorest one. It was noted that many water qualities of these water supply sources exceeded standard qualities of established by Department of Health and were harmful to customers of Sukon Island. The state of water resources on Sukon Island was assigned as warning condition.

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Thesis Advisor's signature