

主 論 文 要 旨

2011 年 3 月 31 日

Title Study on Methods of Detailed Water Demand Forecasting and Establishment of a Water-source Selection Standard in Wide-area Waterworks for Water Supply Planning

ふりがな としゆき しみず
Author Toshiyuki SHIMIZU

Abstract

Waterworks is the one of the most important infrastructure for the society. Recently, there are still some problems surrounding waterworks such as water demand decreasing, renovation of old facilities, privatization issue, wide-area waterworks, etc.

The objectives of this study are to forecast domestic water demand in household level considering social trend and to establish the water-source selection standard in wide-area waterworks.

Forecasting domestic water demand in the long term is important for water supply planning. Recently, domestic water demand in Japan has been decreasing. Water demand structures are complicated due to the variation of the factors affecting them. It has therefore become difficult to forecast domestic water demand by trend methods. The aim of this study was to clarify the factors effecting water demand. Changes of the factors were analyzed by the results of the questionnaire surveys carried out at intervals. Additionally, the actual situations of end-use were analyzed by measurement survey. A model considering social trends and spread of water-use equipment was developed to simulate water consumption of each end-use. Simulation results showed that in 2020 there is the possibility that water consumption will decrease by 5% compared to the present situation.

Recently, the necessity of the wide area waterworks has been discussed in to reinforce the management and fiscal. To formulate wide-area waterworks plan consisting of water wholesaler and multiple waterworks is difficult to adjust due to the difference of their cost structures including the expense burden issue of water-source. This study was investigated focused the water-source selection. Case study area was south region of Kyoto Prefecture in which relationships among water-source issue, water wholesaler and waterworks was complicated. The concepts and policy options for promoting wide area management was proposed using the results of cost price and expense estimated by scenario simulations.