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A PILOT PLANT STUDY OF A PEBBLE BED FLOCCULATOR

BY

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ABSTRACT.

In a small country like SRI LANKA where the Government is adopting various ways and means to improve the standard of living of the masses it has become a prime importance to provide safe drinking water. In the past, when the cost of construction and operation and maintenance was cheap when compared to the present day practices, conventional water treatment plants were constructed just as what was done for the developed countries. This has now been found to be unsatisfactory for use in local conditions in the way of its designs as well as on the operation and maintenance aspects. Under these circumstances, it has become an urgent need to carryout research and development on our own to produce safe drinking water at reasonable cost. Pebble bed flocculation type of treatment process is one such type of study which have proved to be useful to modify the existing plants in the island as well as for new installations in the future. The scope of this project studies is to understand the operation of Pebble bed flocculator under variable perameters such as the flow rate - turbidity , Pebble size etc. Inorder to assess the performance of the Pebble bed flocculation process plots of log Z/T - t/t_1 were plotted and changes for varying parameters were observed and studied. From the comparison of the results it could be clearly seen that it is very promissing and could be used for medium scale plants. The turbidity of raw water that could be treated by this process range from 20 NTU to 100 NTU.

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NOTATIONS

A	Sample taken after 15 mint of test run.
B	Sample taken after 30 mint of tset run,
C	Sample taken after 60 mint of test run.
D	Sample taken after 90 mint of test run.
E	Sample taken after 120 mint of test run.
$q_{1,2,3}$	Flow rate through the pebble bed in l/mint.
$R_{1,2,3}$	Removal percentage.
t	The turbidity of the sample at depth Z and at time T
$t_{1 \text{ to } 6}$	The initial turbidity of sample.
T	The time after initiation of settling.
Z	Distance from the top of air water interface of settling column.