Utilization of Hydrocylone in Water Treatment Process to Reduce Raw Water Turbidity

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***Abstract*—**The using of hydrocylone as a pre-filtering system in a water treatment facility has been studied in this research. Series of tests (runs) has been carried out on a designated hydrocylone with diameter of 85mm and total length of 510mm which is convenience to a pumping rate of 50 L/min and pressure of 150,000 Pascal. These runs represent the turbidity range that comes in Al-Hillah river/Iraq-Babylon province. To investigate the results, a mobile turbidity meter has been used to measure the turbidity and Bettersize 2000 laser particles size analyzer has been used to investigate particles distribution which caused each turbidity for both inlet feed water and overflow water.

For all runs, the hydrocylone results showed that the used hydrocylone recovered 84.6% of the feed water through the overflow outlet and recovered 15.4% through the underflow outlet, It is started in the first run with a feed water turbidity of 300 NTU, and the hydrocylone concentrated the solids loaded in the raw water by 155.66% and reduced the turbidity by 52.33%. The second run was a raw water feed of 250 NTU; the hydrocylone concentrated the solids loaded in the raw water by 124.8% and reduced the turbidity by 55.60%. Then, in the third run of 200 NTU, the hydrocylone concentrated the solids loaded in the raw water by 268% and reduced the turbidity by 58.50%.

For the fourth run, the raw water turbidity was 150 NTU, solids loaded in the raw water has been concentrated by 246% and turbidity reduced by 60.67%. The fifth run was with a turbidity of 76 NTU, results were a concentration of 685% and turbidity reduction by 38.17%. The sixth and seventh runs were with a feed water with turbidity of 28.07 and 12.93 NTU respectively, the results was concentration of solids by 434%, 145% and turbidity reduction by 37.37% and 11.98% respectively.

***Keywords*—** Hydrocyclone, Separation, Turbidity reduction.

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