Abstract

Investigation of physical and chemical characteristics of bed sediments is essential in the allocation and utilization of water resources. Physical and chemical characteristics of sediments is usually a function of factors such as bedmaterial of river basin geology, basin geomorphology, river discharge regime, wastewater resulting from human activities and exchange of surface and underground water in the basin of them. In this study, the changes of sediment gradation and sedimental organic materials were examined along the Sistan River. In this regard, sampling was done from River upstream in the border of Iran and Afghanistan to the Hamoon Lake. Then the sediment gradation tests were done by sieve and hydrometer in laboratory of water department of Zabol University and also the nitrite, nitrate, phosphorus and potassium of sediment were analyzed chemically. The results show that the grain size from the beginning to the end of the Sistan River has gradual changes. The average diameter of sediment changes from 0.196 (mm) in upstream to 0.194 (mm) in downstream along the 60 km of river. Zahak and Sistan dams have reduced the sedimnt size in the near upstream of them. The sediment gradation of Sistan River is uniform with the mean sediment coefficients of uniformity and curvy equal to 1.589 and 1.112 respectively.. The results of chemical tests show that the amount of nitrogen pollution in the upstream and downstream river are 0.13 mg/lit and 0.20 mg/lit respectively. The phosphorus pollution was observed in two points that are the sample of Quran bridge and the sample of pumping station. The highest pollution measure is related to the sample of before Quran bridge by amount of 2.927 mg/lit and the lowest pollution measure is related to the first sample after sistan bridge by amount of 0.045 mg/lit, But at the mean of the river with the 0.635 mg/lit, is not contaminated. The most potassium pollution is related to the latest sample in downstream of river by the amount of 21.656 mg/lit and the lowest pollution is related to the sample of kahak town in upstream of river by the amount of 1.572 mg/lit. According to total average results along the Sistan River, this river is one of the rivers with low pollution or acceptable level pollution.

Key words: River, Bed sediments, Grading curve, Nitrogen, Phosphor, Potassium, Sistan

University of Zabol
Graduate school
Faculty of Water and Soil
Department of Water Engineering

The Thesis Sumbitted For The Degree M.Se
(In the field of Water Resources)

Investigation of the Physical and Chemical Properties of Sediments in Sistan River

Supervisor
Dr.F.Hasanpour

Advisor
M.Jarke

By
Mortaza.Mohamadi Sedigh

February 2017