

Hydraulic Calculation of the Movement of Sediments in the River Flow by the Length of the Flow

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Abstract:

As you know, it is also important to study the order of movement of blurred sediments in open ones, as well as to analyze the process of deposition of suspended sediments during its analysis. From field studies as well as from scientific and theoretical conclusions, the deposition of turbid particles in the stream along the length of the stream will also depend on changes in the flow rate and flow. This article will consider the hydraulic calculation of river sediments by the length of the flow.

Keywords: Muddy sediments, flow length, diameter, mineral, washing process.

1 Introduction

It is very important to study and analyze the blurry pressing conditions that formed the basis of the cisterns and irrigation channels in irrigation systems. Extinguishers in the design of clarifiers are determined depending on the degree of turbidity in the stream to the degree of clarification in the clarifier. The insufficient state of the amount of turbidity in the flow causes the channels to press into the mud.[1] which in turn causes problems in the system. To solve these problems, it requires the design of clarifiers used in irrigation systems, as well as the calculation of the distribution of the existing turbidity in this current by the length of the clarifier. And the question of calculating the distribution of sedimentary particles over the length of the current has not yet fully found its solution. In resolving this issue, solid particles are much needed for light washes that constantly change in diameter.[2]

2 Materials and Methods

The study of the distribution of hanging sediments by the length of the stream in prismatic grooves was carried out by a number of scientists. Including Abal'yans S.X., Altunin V.S., Arifjanov A.M., Fathulloyev A.M., Abduraimova D.A., Ibad-Zade Y.A. it will be possible for such scientists to see in their scientific research.[1]

Fuzzy pressing in the ocean requires the assessment of processes and the implementation of a prediction of the amount of sediment in relation to its previous and current state when solving the tables of the effective use of hydrotechnical structures that distribute fuzzy sediments in the river. For this reason, the solution of the problem of avoiding fuzzy pressing of irrigation channels, reaching cultivated areas of fuzzy sediment particles rich in mineral fertilizers is studied in the case that follows from the laws of the distribution of sediments by the length of the flow. [3] in the investigation of these laws, field-research work carried out at the crop-free pumping station located in the Andijan region, as well as proposals for the design of a clarifier at this pumping station, the object is carried out annually after the period of irrigation of the lands to clean up the mud accumulated at the pumping station. This is due to the fact that the useful work coefficient of the water-bearing channel (clarifier) is not high. This in turn requires a redesign of the incinerator.[4]

3 Results and Discussion

In the river flow, only a certain amount of turbid sediments can be transferred, and the carrying capacity of the flow or the capacity of the turbid transfer to this amount is reduced. That is, when the amount of turbidity in the stream is less than the carrying capacity, the stream receives this insufficient amount from the wall of the stream, and the process of washing occurs in the stream.[5]

One of the most convenient methods for calculating the distribution of turbid particles in the stream along the length of the stream is A.N.Gostunsky [7], proposed by. A.N.Gostunsky recommended this style to perform hydraulic calculation of clarifiers. The essence of the method is that the amount of turbidity in the flow consists of two parts, that is, excessive turbidity and turbidity corresponding to the carrying capacity of the flow:

$$S_i = S + S_t \quad (1)$$

here:

S_t – excess turbidity, that is, turbidity, which should remain in the clarifier;

S_i - flow turbidity (mean turbidity by cross section);

S - turbidity corresponding to the carrying capacity of the flow;

S.X.Abal'yans [8] A to represent the distribution of hanging sediments by the length of the stream. I. Based on the gostunsky model, it offers the following method of calculation:

$$S_x = S + (S_0 - S) \exp \left\{ -\frac{w_x}{q} \Delta x \right\} \quad (2)$$

here: q – unit spending; S_0 – the amount of turbidity in the initial part of the stream;

Y.A.Ibad-zade [5] is based on the following hypothesis to represent the distribution of sediments over the length of the stream: the ratio of the amount of excess sediment in the stream to the average rate of deposition is a constant magnitude across the stream during the tekkis motion, and this magnitude value is taken to be equal to the ratio of the initial excess sediment to the average. The result proposes the following equation to represent the sediment distribution over the length of the stream:

$$S_x = \frac{S - S_0}{\frac{q}{w_0} + x} * \frac{q}{w_0} + S_0 \quad (3)$$

Conclusion

Thus, we will be able to cite the following conclusions from the analysis of equations that represent the calculation of the distribution of sediments over the length of the stream [13]:

a) the algorithm of their equations for this calculation is basically similar to each other, that is, the calculation of the distribution of sediments over the length of the stream (the punctuation process) represents exponential or similar laws;

b) all equations involve parameter S , which represents the carrying capacity of the current.

In addition, it should be noted that a different aspect of the existing equations, which represent the calculation of the distribution of sediments over the length of the stream, is the presence of structures in determining the carrying capacity of the stream.

For this reason, the development of computational methods that accurately assess the carrying capacity of a stream would have given the opportunity to solve a number of practical issues. In particular, also when performing hydraulic accounting of clarifiers in irrigation systems.

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