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NEGATIVE IMPACT OF WATER-CONTAINING NANONS ON THE RESERVOIR

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Annotation: This article examines the issue of preventing the inflow of silt deposits into the Tudakul reservoir through the Amu-Bukhara machine canal and improving the operating mode of the Uchlik water distribution facility, and provides scientifically based recommendations.

Keywords: channel, settling tank, canal water discharge, silt, flow velocity.

In order to obtain a stable harvest in agriculture in the Bukhara region, the Khamza and Kuyumozor pumping stations were built on the Amu-Bukhara Canal, and the possibility of raising water to a height of 67 m was created. The total length of the canal was 196 km, and 90 thousand hectares of land were irrigated. In 1966, the canal was named the Amu-Bukhara Machine Canal (ABMC). [1,2.].

Methods of combating silting of irrigation canals. The modern concept of combating channel turbidity with suspended sediments provides for the construction of channels with parameters that ensure the corresponding carrying capacity of the flow, and excess sediments should be retained in settling tanks. This rule has no more rational alternative implementation if there are reliable and accurate methods for calculating the carrying capacity of the water flow. However, until now, such methods did not exist, therefore it was impossible to fully implement the modern concept of combating channel silting. Indeed, the imperfection of methods for determining the carrying capacity of flows in canals is directly reflected in the calculation of the design parameters of settling tanks, taking into account data on carrying capacity. [2, 4,].

When studying the clarification of flow in settling canals built for water intake and transportation from rivers, we use the data provided by Kh.Sh.Shapirov. According to these data, during the settling of the flow, 99.4% of fractions d>0.10 mm, 92.6% of fractions d=0.10-0.05 mm, and 60.9% of fractions ρ=0.05-0.01 mm precipitate in the settling tanks. Fractions with d<0.01 mm do not precipitate, on the contrary, an increase in their content in the flow is observed.

H.Sh.Shapiro explains this unexpected result of his measurements by the washing away of fine particles from the bottom sediments formed during the reformation of the channel bed constructed according to the project. As a result of the unimpeded passage of fine-grained fractions through a settling channel with a length of 3 km, these fractions settle to the bottom of the main canal, which reduces the carrying capacity of suspended flow at the water distribution points for irrigation (in the discharge and distribution channels of the irrigation network). [1, 3,].

Analysis of scientific literature, modern theoretical approaches, and methods of combating silting allows us to draw the following conclusions:

1. The problem of preventing the introduction of bottom sediments into the irrigation network is currently being solved using mechanical means, the operation of which is based on scientific and technical developments.
2. The design parameters of modern settling tanks, in particular their longitudinal dimensions, do not provide the necessary conditions for the settling of fine-grained fractions that do not settle in

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the settling tank, which are transported in practically full volume along the canals and accumulate at irrigation water intake points due to the loss of transport capacity of the flow.
3. Modern designs of dam water intake structures (gallery water intake structures for retaining sediments, flow guiding systems, etc.) do not fundamentally solve the problem of sedimentation of suspended sediments in connection with the prevention of sedimentation of fine-grained sediments.
4. The main task of studying the processes of sedimentation and erosion of riverbeds at the present time is the development of new methods for calculating the carrying capacity of water flow in riverbeds and canals based on the theory. The success of solving this problem depends on the efficiency of calculating settling tanks, the choice of design parameters of the channels, and the technology of operation of the cleaning equipment.
6. The design parameters of canals change over time as a result of the transformation of their channels under the influence of suspended flow, striving to form a channel corresponding to the minimum dissipation of the average movement energy. Changes in the design parameters of the channels lead to a change in the carrying capacity of the flows in the channels.
The obtained conclusions indicate the imperfection of the modern concept of combating silting. In the practical plan, only one issue has been resolved - the protection of irrigation systems from silting by bottom sediments. [4,6,8,].
In this regard, the concept of combating silting was considered based on the development of new methods for calculating the carrying capacity of water flows in the irrigation system from the point of view of regulating their carrying capacity. This allows us to abandon the use of technical means to stop the flow of fine-grained fractions from entering irrigation systems. Indeed, the calculation of the parameters of settling tanks for complete settling of the water flow (within the framework of saturation theory) indicates the need to construct reservoirs with dimensions corresponding to the parameters of reservoirs. The absurdity of such an approach is obvious, therefore, the rational way out of the current situation is to ensure an increase in soil fertility by allowing fine-grained fractions not to settle, but, on the contrary, to move them freely through canals to irrigated fields and allowing sludge to settle. To solve this problem, new, more modern methods for calculating the carrying capacity of watercourses are necessary, the development of which is the main goal of this work. At water intake points, a decrease in the depth (velocity) of the flow should be compensated by a decrease in the cross-sectional area of the canal or an increase in slopes in order to maintain the carrying capacity of the flow throughout the entire canal.
In turn, new effective methods for calculating carrying capacity allow for the selection of design parameters that exclude silting of canals and, consequently, create conditions for screening channel channels in order to protect them from erosion and reduce filtration losses.
To reduce the inflow of sediments into the Amu-Bukhara Canal's inlet channel, it is necessary to reconstruct the inlet channel structure in such a way that the flow circulation in the river is improved, ensuring that the flow with the main portion of sediments flows downstream from the river intake structure and the relatively low-sediment portion of the flow enters the channel [7,8,9].
The turbidity of the water flow entering the Amu-Bukhara machine canal averages 3.2 kg/m^3, and the average annual volume of incoming sediments is 8-10 million tons.
In the area of water intake into the Amu-Bukhara Canal, the flow, based on the above features, rapidly changes the direction of the channel and continues to complicate water intake.
As a result of many years of research

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Measures are being taken to improve water intake into the Amu-Bukhara Canal and, mainly in the water intake area, to ensure the inflow of the Amu Darya riverbed into the intake manifold and a reduction in the amount of sediments.

As a result of our research, it is necessary to plan the design of a settling tank in the upper part of the Uchlik water distribution facility and place the dredger located in the Amu-Bukhara machine canal in the settling tank. [1,5,9.]

CONCLUSION.

1. As a result of theoretical and experimental studies, structural elements of a settling tank have been developed in the Amu-Bukhara machine canal, allowing for a 30% reduction in the inflow of sediment into the reservoir.
2. Improvement of the operating conditions of the triple water distribution facility has been substantiated. As a result, conditions were created for guaranteed water supply to the Kyzyltepa and Kuimazar pumping stations and the Tudakul reservoir.

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