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"YASHIL ENERGETIKA VA UNING QISHLOQ VA SUV XO'JALIGIDAGI O'RNI" MAVZUSIDAGI XALQARO ILMIY VA ILMIY-TEXNIKAVIY ANJUMANI

MATERIALLAR TO'PLAMI

29-30-aprel, 2025-yil

"Yashil energetika va uning qishloq va suv xo'jaligidagi o'rni" mavzusidagi xalqaro ilmiy va ilmiy-texnikaviy anjumani materiallar to'plami (2025-yil 29-30-aprel) -B.: Buxoro davlat texnika universiteti (Buxoro tabiiy resurslarni boshqarish instituti), 2025.

To'plamga kiritilgan tezislardagi ma'lumotlarning haqqoniyligi va iqtiboslarning tog'riligiga mualliflar mas'uldir.

$$Q_\text{п} = \frac{B \cdot H^{5/3} \cdot i^{1/2}}{n_p} = \frac{600 \cdot 4,5^{5/3} \cdot (0,00014)^{1/2}}{0,018} = 4800 \text{ m}^3/\text{s}.$$

Actual throughput $Q_ф = 3500$ m³/s.

Design capacity $Q_n = 4800$ m³/s.

Conclusion. Thus, the actual capacity of the regulated river bed is 25-30% less than the design capacity due to the increase in the roughness coefficient on the periodically operating part of the bed width. The decrease in the actual capacity must be taken into account when discharging water through the discharge structures of reservoirs during the passage of a flood along the Amu Darya River bed.

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RECOMMENDATIONS FOR IMPROVING THE CAPACITY OF THE AMUDARYA RIVER CHANNEL BETWEEN THE TUYAMUYUN-TAHIATASH HYDRAULIC STRUCTURES

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Abstract. This article presents the research work on improving the water carrying capacity of the Amudarya riverbed from the Tuyamoyin reservoir hydro unit to the Takhyatosh hydro unit. In the course of the research, the current state of protective and corrective structures in the considered river section was studied and analyzed. According to the results of the study, measures were developed for the restoration and repair of protective and corrective structures in Amudarya.

Key words: water flow, water carrying capacity of the river bed, adjusted river bed, water reservoir.

Аннотация. В данной статье представлены научно-исследовательские работы по улучшению пропускной способности русла реки Амударья от гидроузла Тюямуюнского водохранилища до Тахиаташского гидроузла. В ходе исследований было изучено и

проанализировано современное состояние защитных и русло-регулировочных сооружений на рассматриваемом участке реки. По результатам исследования были разработаны мероприятия по восстановлению и ремонту защитно-регулировочных сооружений на р.Амударье.

Ключевые слова: расход воды, пропускной способности русла, зарегулированного русла, водохранилище.

Annotatsiya. Ushbu maqolada Amudaryoning Tuyamo'yin suv ombori gidrouzelidan Taxiatosh gidrouzeligacha bo'lgan qismidagi o'zanning suv o'tkazish qobiliyatini yaxshilash bo'yicha tadqiqot ishlari keltirilgan. Tadqiqot jarayonida qaralayotgan daryo uchastkasidagi himoya va rostlovchi inshootlarning hozirgi holati o'rganildi va tahlil qilindi. O'rganish natijalari ko'ra Amudaryodagi himoya va rostlovchi inshootlarini tiklash va ta'mirlash bo'yicha chora-tadbirlar ishlab chiqildi.

Kalit so'zlar: suv oqimi, o'zanning suv o'tkazish qobiliyati, rostlangan o'zan, suv ombori.

Introduction. Assessment of riverbed processes, efficient water flow management, improvement of riverbed capacity and ensuring safety of hydraulic structures are some of the main areas of water resources management in the world [2]. In this regard, special attention is paid to the management of river flow over time and the resulting riverbed processes, development of hydraulic calculation methods when designing new and existing riverbed hydraulic structures, taking into account changing factors and improving capacity using riverbed-regulating structures. Currently, in our Republic [3], targeted measures are being implemented to ensure the safety and reliability of hydraulic structures based on the study of riverbed processes [1], regulation of water flow in riverbeds and protection of coastal lands and populated areas from flooding.

To regulate the bed of the Amu Darya River in the period 1978-1984. From Tyuyamuyun to Kipchak, it is planned to build 255 traverse dams, each from 150 to 2750 m long. The distance between the dams varies from 720 m to 2700 m. The length of the regulated section is 185 km. Of the planned 255 traverse dams, 90% have been built, of which 40% of the headwalls were reinforced with rock fill. As a result of these measures, floods along the Amu Darya River have not threatened to wash out or flood the coastal area for many years. The successful operation of the traverse dams was also facilitated by the Tyuyamuyun reservoir, which retains part of the flow in the regulating capacity [4]. Thus, in 1998, a flow of 5500 m^3/s entered the reservoir in a few days. The discharge structure discharged a flow rate of 4,500 m^3/s into the lower pool.

In general, the measures taken to regulate the water flow and regulate the river bed gave a positive effect on the use of water resources and the passage of flood waters along the Amu Darya River. The incompleteness of the reinforcement of the heads of the traverse dams with rock fill, insufficient scientific justification of some elements of the traverse dams gave their negative results. In some places, the banks and traverse dams were washed away, and the wandering zone of the riverbed expanded during the flood.

The state of the protective and regulatory structures along the Amu Darya River below the Tyuyamuyun hydroelectric complex [5].

On the Amu Darya River, in 1978-1984, a special project was launched to protect the banks and populated areas. riverbed regulation schemes were drawn up from the Tyuyamuyun reservoir to Kipchak, 185 km long; protective dams and spurs were also built in other local sections of the river. As the studies showed, the constructed protective dams and spurs prevented possible damage from the impact of floods on the coastal strip of the Amu Darya River. As a result of many years of operation, erosion and destruction of protective dams and spurs occurred.

In particular, along the right bank of the Amu Darya River (Republic of Karakalpakstan):

− Turtkul district - the dam line 700 m long is destroyed, spurs No. 30, 48, 60 and 62A are damaged;

− Ellikkala district - I-II dam line 8400 m long is washed away, spurs No. 70A and 78 are destroyed;

− Beruniy district – the first line of the dam, 8100 m long, and spurs No. 96A, 96B, 102, 146, 154 and 172 are partially destroyed;

– Amu Darya district – the first line of the dam, 6000 m long, and spurs No. 193, 199, 217, 219, 247 and 255 are partially destroyed;

– Nukus district – the first line of the dam, 3500 m long, and the spur protecting the city of Nukus require repair and restoration. On the left bank of the Amu Darya River (Khorezm region):

– Tuprok-Kala massif – the first line of the dam is 234 km long, spurs No. 4o, 5, 7, 8, 10o and 11 are partially destroyed, spur 4a was completely washed away by the flow in 2010;

– Khazarab district – the first line of the dam is 7000 m long, spurs No. 25, 27, 31, 33, 35, 39 and 41 are partially destroyed;

– Bagat district – traverse dams are 8000 m long and spurs No. 41, 81A are partially destroyed;

– Khankin district – the 1st line of protective dams, 10,000 m long, spurs No. 63A and 71 are destroyed;

– Urgench district – the 1st – 2nd line of the dam, spurs No. 81, 83, 103, 105 are destroyed;

– Yangibazar district – the 1st line of protective dams, spurs No. 111, 121, 123, 123A and 127 require repair;

– Gurlen district – the 1st – 2nd line of the dam, spurs No. 143, 143A, 161, 165, 171 and 175 are completely or partially destroyed.

As a result of the destruction of dams and spurs in many places of the Amu Darya River, there were erosions and destruction of banks, lands, and a shift in the river fairway on both banks of the river. In some places, there were threats of flooding of lands.

Conclusion. In general, on both banks of the Amu Darya River, more than 60% of the constructed spurs and banquettes require restoration and repair. Based on the survey results, measures were developed to restore and repair protective and regulating structures on the Amu Darya River. The developed measures were accepted for implementation by the Ministry of Water Resources of the Republic of Karakalpakstan.

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