

# CURRENT STATUS OF ANCIENT HYDROTECHNICAL STRUCTURES AND THE NEED FOR MODERNIZATION OF CERTAIN TYPES AND TYPES

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**Abstract:** This article provides a detailed description of the current state of ancient hydraulic structures in Uzbekistan and the need to modernize some types and subspecies.

**Keywords:** : type, subspecies, modernization, takyr, kurush, kaynar, kugush, well.

Ancient hydraulic structures located on the territory of the Republic of Uzbekistan can be studied in the following groups according to their current state:

A group of ancient hydraulic structures that are still functioning. This group mainly includes ancient canals such as Dargam, Tuyatortar, Shofrikon, Khaykanyk, and Khanka. Most of them are laid over loess or loess layers, so they practically do not require reconstruction. Because loess has poor filtration. It is enough to install modern water separators at some points or lay special impermeable coatings in the aquifers. The Khojai Imkonagi mine ditch, which has been preserved on the territory of our republic, also belongs to this group.

A group of modernized ancient hydraulic structures. This group includes reservoirs, wells, springs, chutes, levees, and novae, as well as their sub-types. Because modern reservoirs are improved descendants of those ancient reservoirs in our republic. Wells - boreholes, springs - artesian wells, pipes made of metal or asbestos of various sizes, troughs, lifts, banks, cherts, spews, and demps are being replaced by improved electric water-drawing devices. The role of sluices, dams, and sluices is being played by sluices that are opened, raised, and lowered by electric devices. The original form of the mentioned types has been preserved only in very rare cases or is used only in extreme cases. Glaciers have given way to

huge electrified icehouses. Water pipes, sewers, and modern sewage systems, mills, and mills are driven not by water, but by electric motors.

A group of ancient hydraulic structures that need to be modernized. The strong demand for fresh water and its constant growth, the need to use some types and subspecies enriched with modern materials and reconstructed, are among the most urgent issues of the day. They are as follows:

It is necessary to protect the low-lying, water-collecting areas of modernized alluvial plains from intensive absorption of accumulated atmospheric precipitation with special cellophane, concrete or asphalt coatings. In this way, an average of 1 km<sup>2</sup> of artificial barren land will allow the accumulation of 10,000 m<sup>3</sup> of clean, fresh drinking water. Because this indicator is typical for barren areas such as the Karakum, where the annual precipitation is 80-90 mm (V.N. Kunin-1955, p. 223). The author estimates that the amount of precipitation is not annual, but in the winter-spring months, that is, without drying out the surface layer of the ravine, almost nothing is spent on absorption. Because the surface layer, consisting of fine-grained silt deposits, has a very low infiltration rate. However, in this case, intensive evaporation cannot be combated. Therefore, it is advisable to store the accumulated fresh water reserves in special, closed-topped cavities dug out of the ground. The simplest of them is a cistern, and the more complex one is a cistern.

To make a modernized cistern, the most central point of the cistern, that is, where the accumulated pond is relatively far away, is selected, and a hole is dug there, the perimeter and bottom are covered with cement. The upper part is covered with light plastic covers, and steps are placed from any side of the resulting modern cistern to go down and (take) water. This is a very simple and therefore inexpensive device, even if each of them has the ability to collect 100 m<sup>3</sup> of water, or even more, each of them will be able to provide a flock of 600 sheep with fresh water all year round in desert conditions. Because 10,000 m<sup>3</sup> of water is enough to water 6,000 sheep all year round (V.N. Kunin-1955, p. 224).

Modern, rock formations can be established not only in the desert, but also in hilly areas, along seasonal streams. Because the possibility of using the current formed in winter and spring is promising at such points.

Modernized Tank. There is also a strong demand for modernized models of cisterns at a time when the global desertification process is accelerating, as in our time. Concaves, which are the main elements of the relief of desert areas, serve as an important indicator for the construction of modernized cisterns. Seasonal-ephemeral lakes formed along such points have an average area of 3 square meters. km. in those with the size (areas with annual precipitation of 80-90 mm) about 40,000 m<sup>3</sup> (tons) of clean, fresh snow-rain water is collected. This indicator is equal to the amount of water for 1000 railway tanks (A.Babaev-1983, str-81). So, to save so much water from excessive evaporation and seepage, it would be possible to build 1,300-1,400 modernized cisterns with an average water capacity of 300 m<sup>3</sup> around one ephemeral lake. The bowl and dome of the modernized cisterns can be made of reinforced concrete structures, and this work would be done separately. It is advisable to build them in cooperation with future cistern builders based on their design skills. Modernized cisterns can be built not only in desert areas, but also in the steppe zone, in general, wherever there is an opportunity and need to store water. There are a large number of them in desert areas is formed based on the number of ephemeral lakes. As we noted above, it is possible to create dozens of modernized cisterns around an average-sized ephemeral lake. Map No. 1 shows the geography of the scarp formations along similar small depressions along the southwestern territory of Uzbekistan.

Modernized pond and gulfak pond. These types are important for collecting and storing water, and in particular, they have undergone natural selection to be formed on the basis of the natural geographical conditions of the desert and adir region. Therefore, in our time, there is an opportunity and a need to organize them in the same regions. The modernization of these types of ancient hydraulic structures can consist of a number of simple structures. That is, their main part is

made of concrete linings and has various sizes. If we take into account that the ancient pond or gulfak pond accumulates an average of 1800-2000 m<sup>3</sup> of water, it would be appropriate to build their modernized versions with the same water capacity. Because, firstly, the existing low-water springs in the adir region, which are the main source of saturating gulfak ponds, rarely have the opportunity to accumulate more than the indicated amount of water per day. Secondly, especially in the desert region, the accumulation of water in the basin of more than the specified amount over a long period of time can lead to its qualitative deterioration. Modernized wells and cisterns. The ancient representatives of this species had a geographical distribution only along the desert regions. In our time, their geography has expanded to include not only the desert, but also the adir region, because the groundwater level in the adir region of our republic has decreased sharply, and this indicator was 15-18 m in the 2010s, while in our time this indicator is 40-50 m. Therefore, the organization of a system of modernized wells and cisterns in the adir region will allow us to change this process for the better, or at least stabilize the dynamics of further decline in the groundwater level. To achieve this, it is more effective to not only recharge groundwater, but also to take measures to reduce groundwater withdrawals.

A group of ancient hydraulic structures that are of archaic importance and do not require modernization. This group includes ancient hydraulic structures such as a circle, a ditch, a water tank, a lift, a spillway, and a dam. Because they have lost their original significance in our time due to their function, they are of great scientific, historical, and geographical interest.

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