INFLUENCE OF PHYSICAL AND GEOGRAPHICAL PROCESSES ON THE STATE OF BREAKTHROUGDANGEROUS LAKE IN THE KOKSU RIVER BASIN

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Abstract: *This article discusses dam lakes located in the basin of the Koksu River, their formation, as well as the influence of physical and geographical processes occurring in this basin on them.*

Key words: *landslide dam, dammed lakes, Lake Bottom, morph metric indications, hydrologic regime*

As in all mountainous regions of the world, landslides, landslides and landslides are actively developing in the high mountain ranges surrounding the Fergana Valley. As a result, landslides and landslides occur. There are 14 such sites in the Koksu River Valley, a right tributary of the Shohimardon River[3]. A typical example of such a collapse is the Kurbankol collapse dam. Kurbankul Lake dam belongs to the genetic type of collapse according to the classification of exogenous-geological processes proposed by VP Pushkarenko [3]. According to sources, its formation is associated with three consecutive collapses on the right side of the basin in an earthquake in 1766 in the valley of the Koksu River [4]. Geophysical studies of the Fergana hydro geological expedition, as well as other studies, confirm that the dam is composed of collapsed layers with different filtration characteristics in three different generations [1].

In recent years, as a result of the rapid development of natural geographical processes in the basin, significant changes have been observed in the hydrological regime of Kurbankul Lake. These processes are reflected in:

- The accumulation of rocks on the bottom of the lake as a result of active erosion on the northern and southern slopes of the lake basin;
- The formation of sediments on the bottom of the lake by muddy estuaries of the Koksu River;
- In recent years, the left bank of the upper reaches of the lake has been flooded with deposits of flood currents, which are often observed in the Akhunkul River, blocking the river Koksuv;
- The emergence of a new, smaller lake above Kurbankol Lake as a result of the blocking of the Koksu River by erosion and flood deposits;

- The fact that the new lake will block the waterway from Kokkol Lake (Yashilkol) above Kurbankol Lake, and as a result, due to stagnation, more water will accumulate in Kokkol, etc.

As a result of the above-mentioned processes, the Kurbankol Lake dam system of lakes has been formed in the basin of the Koksu River. Below we will briefly discuss its details.

To the south of Kurbankol Lake, 200-250 meters above it, there is a small but very beautiful Kokkol Lake (Yashilkol). It was formed as a result of the blockage of the Koksuv River valley of about 200 m by the conical spreading deposits of the Akhunkul River. The eastern part of the lake opens into the Koksu River. The lake is bounded on the south by mountains and on the north by a dam of ancient moraine and bedrock. Until 1998, part of the water of the Koksu River flowed into the Kokkol Lake and again flowed into the river through a stream. Floodwaters from the Akhunkul River in July 1998 blocked the Koksuv River basin, and as a result, the newly formed lake merged with the Kokkol Lake into a single basin.

As a result of the annual spring and summer floods in Akhunkul, the inflow of the Koksuv River to Kurbankol Lake has risen by almost 2 meters over the last twenty years. This process is still ongoing. In the Axunkol basin, which we witnessed, a flash flood that occurred on August 4, 2009 completely blocked the Koksu River route for almost a day. As a result, the water level of the newly formed lake and the adjoining Kokkol Lake rose to 135 cm.

As a result of our depth measurements on the same day in Kokkol, it was found that the maximum depth reached 5.45 m, and on August 5 - 6.80 m. These and similar cases have a negative impact on the hydrological regime of the Kurbankul Lake and Kurbankul dam lake systems, more precisely, on the stability of the lake dams, leading to an increase in their risk [2].

All morph metric indicators of dam lakes are dynamic in nature, fluctuating sharply throughout the year and even overnight, depending on the amount of water flowing into the lake, as well as changes in the water level in the lake. To this end, one of the directions of our research in the Kurbankul lake system is the study of this issue.

The first data on the morph metric parameters of Kurbankol Lake were given in the researches of L.A. Molchanov (1929), and later in the researches of I.A. Ilin (1959), A.M. Nikitin (1987). However, the morph metric parameters of Kurbankul Lake have not been fully elucidated by the above-named researchers, nor have any data on the size parameters of the newly formed lakes been recorded in any literature.

In order to clarify this issue, we used the field research conducted by the Fergana Hydro geological Expedition (FGGE) and scientists of the National University of Uzbekistan named after Mirzo Ulugbek in 1985-1986, as well as data collected in recent years in the Kurbankul lake system.

During this period, we performed special calculations based on the results of depth measurements carried out on August 8, 1985 in Kurbankol Lake and the tachometric plan of the lake and the fall dam system on June 2-6, 1986.

These calculations made it possible to determine the most basic morph metric parameters of Kurbankul Lake, which belong to different water levels. According to him, when the water level of Kurbankol Lake reaches its maximum value, its water surface area is Gk = 227.8□103 m2, the volume of water collected in the basin is V = 3.037□106 m3, the length of the lake is L = 1069.2 m, the average width is Vmid = 212, 0 m, maximum depth hmax = 23.4 m, average depth hmid = 13.3 m, shoreline length L0 = 2838.2 m. This means that the bowl of Kurbankol Lake can hold 3.04-106 m3 of water.

We have restored New Kokkol Lake to its current condition on the basis of a map-scheme drawn as a result of our depth measurements and planning on August 4, 2009 According to it, the water surface area of New Kokkol Lake, Fk = 41200 m2, length of the lake, Lk = 336 m, maximum width of the lake, Bmax = 164 m, average width of the lake, Burt = 122.6 m, length of the shoreline of the lake, L0 = 832 m , we found that the coefficient, which represents the curvature of the shoreline of the hand, is equal to Ke = 1.17. According to the data, on August 5, 2009, the water surface area of New Kokkol Lake was 41,200 m2, and the volume of water collected in it was 112440 m3.

The morph metric characteristics of lakes in the basin vary depending on their hydrological regime. This is an important factor in assessing the sustainability of lakes. It is safe to say that no one can guarantee that the floods observed in the Oxunkul Lake Basin on August 4, 2009 will not be repeated. This will further intensify the natural geographical processes in the basin and create new lakes in the basin. This further increases the risk of flooding in the area. This is because newly formed dams, which tend to be washed away under the influence of water flow, are likely to cause flooding. As a result, the main dam of Kurbankol Lake below it is also in danger of collapse.

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