



UDK: 91.433

*Armonbek SHARIPOV,*  
Independent student of Bukhara State University  
E-mail: armon@mail.ru  
*Yozil HAYITOV,*  
Bukhara State University professor, DSc  
E-mail: yozil@mail.ru

### ON THE CONNECTION OF LANDSCAPES IN THE AREA OF THE AMU-BUKHARA CANAL WITH SURFACE AND UNDERGROUND WATERS

Annotation

The article examines the connection of surface and underground water with the landscapes of the regions around the Amu-Bukhara canal, which crosses the Olot district. The conducted scientific-research works are highlighted on the basis of experiments in field and laboratory conditions. Experiments were carried out in field conditions by means of measurements in underground observation wells.

**Keywords:** canal, surface water, groundwater, absorption, landscape, melioration, ecology, relief, exogenous, endogenous, visual, saline soil, vegetation, new vegetation.

### AMU-BUXORO KANALI HUDUDIDAGI LANDSHAFTLARNING YER USTI VA YER OSTI SUVLARI BILAN BOG‘LIQLIGI HAQIDA

Annotatsiya

Maqolada er usti va er osti suvlarining Olot tumanini kesib o‘tuvchi Amu-Buxoro kanali atrofidagi hududlarning landshaftlari bilan bog‘liqligi o‘rganib chiqilgan. Olib borilgan ilmiy-tadqiqot ishlari dala va laboratoriya sharoitidagi tajribalar asosida yoritilgan. Tajribalar dala sharoitida er osti kuzatuv quduqchalarida o‘lchash ishlari orqali amalga oshirilgan.

**Kalit so‘zlar:** kanal, er ustki suvlari, er osti suvlari, shimilish, landshaft, melioratsiya, ekologiya, relief, ekzogen, endogen, vizual, sho‘rxok, vegetatsiya, novegatatsiya.

### О СВЯЗИ ЛАНДШАФТОВ В РАЙОНЕ АМУ-БУХАРСКОГО КАНАЛА С ПОВЕРХНОСТНЫМИ И ПОДЗЕМНЫМИ ВОДАМИ

Аннотация

В статье рассматривается связь поверхностных и подземных вод с ландшафтами районов вокруг Аму-Бухарского канала, пересекающего Олотский район. Выделены проведенные научно-исследовательские работы на основе экспериментов в полевых и лабораторных условиях. Эксперименты проводились в полевых условиях путем измерений в подземных наблюдательных скважинах.

**Ключевые слова:** канал, поверхностные воды, подземные воды, поглощение, ландшафт, мелиорация, экология, рельеф, экзогенный, эндогенный, визуальный, засоленная почва, растительность, новая растительность.

**Introduction.** As we know, in recent years, natural and anthropogenic factors have caused a radical change in natural landscapes. This situation is reflected in the regions of Central Asia, including Uzbekistan.

In connection with the construction of the Amu-Bukhara canal, one of the urgent problems of today is conducting scientific research work on the study of the dependence of surface and underground water on natural landscapes in the Olot district of the Bukhara oasis.

**Review of literature on the topic.** A number of scientists, including I.Q.Nazarov and I.Sh.Allayorov, conducted research on the formation and development of natural landscapes. Their scientific-research works were studied in connection with the relief of the formation and development of the landscapes of the place. The authors logically analyzed the topography of the place and discussed the importance of the topography in human life and economic activity. The shape (morphology) of the relief, that is, the unevenness of the surface, has two bases (parts). It is noted that the first is its external appearance (plasticity) and the second is its internal structure.

Man-made relief forms (flat surface irrigated lands, canals, ditches, industrial enterprises, hydrotechnical structures, cities, villages, roads, etc.) are increasing more and more. L.L. Rozanov (1982) calls these artificial creations reliefs.[1]

The main part of the canal starts from the "Main structure" at the foot of the Yumalandi hill, 12 km above the city of Turkmanabad (Kharjev) and passes through the territory of Turkmenistan to the "border" (now referred to as "binary") hydronode (13.8 km), after the "border" hydronode canal water through pumping stations "Olot" (36 km), "Karakol", "Sayyod" in a row, respectively 8.2; It rises to heights of 4.8-7.0 and 14 meters and is transferred to the irrigated lands of the Karakol oasis.

The I-II lines of the Amu-Bukhara machine canal (AMBK) were implemented based on the expansion of the head of the Amu-Karakol canal, and are divided into claw-shaped branches from the "border" hydronode.

The first line of AMBK was launched in 1965 and is 185 km long. Canal water is supplied by a 50m rise through the ABK-1 pumping station.

The 2nd line of ABMK was commissioned in 1975, its length is 233.2 km, canal water is raised 55 m using the ABK-2 pumping station.[5]

In other words, the original natural geographical, or rather geomorphological environment, anthropogenized, acquired a new meaning. It would be correct to say that the changes that took place due to ABMK are reflected today. When the landscape-ecological changes that have occurred are analyzed based on a systematic approach, it becomes clear that they are first of all related to the regional and local relief features of the same place, as well as surface and underground waters.

The carried out scientific-research works are analyzed geographically. This is also important from the hydrological point of view and leads to a change in the water regime in the hydrographic networks.[14]

Research methodology;

Hydrological calculations, water-salt balance, laboratory method, field research, comparison, systematic approach, modern information system (GIS), mathematical statistics, cartographic and geographical generalization methods were used in the thesis work.

The above scientists I.Sh. Unlike Allayorov and I.Q. Nazarov, in our scientific research work, the anthropogenic changes affecting the relief landscape due to the passage of the Amu-Bukhara canal were deeply studied. Engineering observations were carried out around the Amu-Bukhara canal using visual and control measuring instruments.

Figure 1. Saline soils around the Amu-Bukhara Canal

While the advantage of us building our canals from the ground bed is the cheapness of the construction material, its disadvantages are the formation of saline landscaped soils as seen in the picture above, which causes secondary salinization as a result of the filtration water seeping from the Amu-Bukhara canal. The observed experiments showed that due to the lack of concreting of the Amu-Bukhara canal, which crosses the territory of the Olot district, the intensity of seepage is high, and this situation has a negative effect on the salinization of the land, that is, on the landscape balance of the area. This situation is a clear evidence of our opinion that 0.75 ha of land formed on the right bank of the maskur channel 34 km away

Figures 2, 3, 4, 5 describe the processes of taking samples from monitoring wells in field conditions and determining their composition in laboratory conditions.

In field conditions, the groundwater level was measured in the groundwater monitoring wells and their dynamics were studied. For example, water levels were measured and monitored in monitoring wells №188 and №231. The level of underground water in monitoring well No. 188 is 150 cm, while this indicator is 180 cm in monitoring well No. 231.

Diagram 1

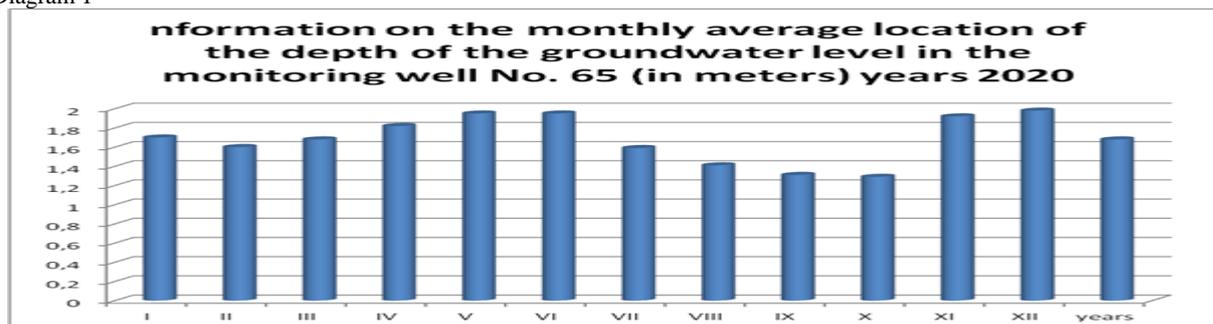
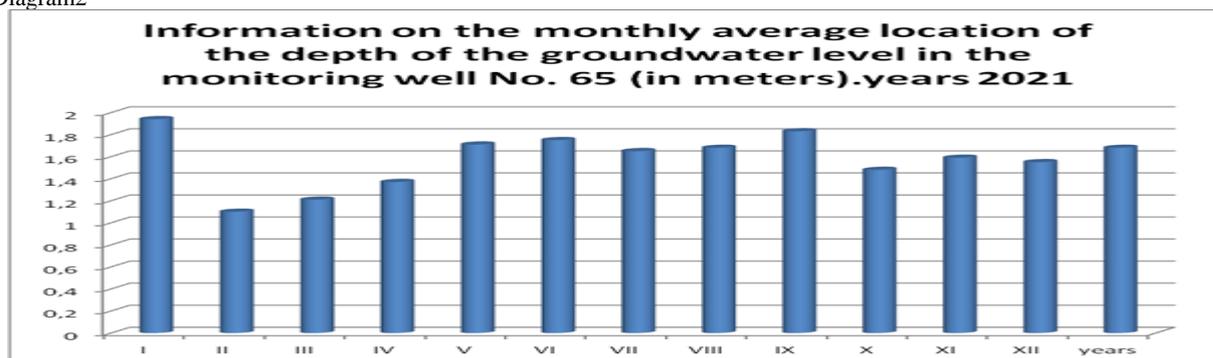


Diagram2



As can be seen from the diagram above, the dynamic change of the seepage water level during the salt washing process was analyzed due to the high salinity of the land in Olot district. In the process of measurement carried out in monitoring well №65, it was found that this dynamic change was 1.63 meters in December 2020, and 1.76 meters in December 2021, and the level of seepage water rose by 13 cm.

It can be seen that the groundwater level is rising as a result of filtration from canals and irrigated lands. This, in turn, causes the eco-meliorative state of the land and the negative change of natural landscapes.

**Analysis and results.** - As a result of the conducted research, the hydrogeological reclamation condition of the irrigated lands located on the left and right banks of the Amu-Bukhara canal flowing through the territory of Olot district was studied;

- In order to develop irrigated agriculture and land reclamation, hydrological calculations were carried out in Olot district;

- practical recommendations for the effective use of collector-zovors for improving the eco-meliorative condition of lands in this area have been developed;

- it is based on the fact that the internal hydrographic structure of each natural reclamation region plays a special role in the rational use of land and water resources.

- aspects of connection of surface and underground waters with landscapes are highlighted.

**Conclusions and suggestions.** In conclusion, it should be said that in order to ensure the stability of the landscapes in the area, it is necessary to carry out scientific and research work on the continuous control of surface and underground water. Depending on the dynamic change of landscapes, it is necessary to develop measures for the placement of crop species and the construction of collector ditches.

-Construction of additional ditches in order to reduce the negative impact of the filtration water from the Amu-Bukhara canal on landscape improvement;

-Regular hydrological monitoring of the Amu-Bukhara canal in Olot district;

-Analysis of natural-geographic reclamation conditions of the right and left banks of the Amu-Bukhara canal, dynamics of landscape change;

- Assessment of whether this area is provided with collectors-zovors;

- Improvement of ecomelioration condition of irrigated land in Olot district;

#### LITERATURE

1. Allayorov N.Sh., Nazarov I.Q. Geography of Bukhara Bukhara-1994 pp. 14-16.
2. Hayitov Yo.Q., Haydarova O.Kh. Change of the flow of the Amu-Bukhara canal between ears and ears // Current problems of environmental protection in Uzbekistan. Proceedings of the republic scientific-practical conference. Samarkand, 2013. B 142-143.
3. Hayitov Y.Q., Water resources of Bukhara region and their protection // Theoretical and practical problems of geography. Republican theoretical scientific-practical conference. Tashkent, 2006. B.84-85
4. Hayitov Y.Q., land reclamation of Bukhara region and its connection with underground water // Modern geography and its development prospects. Proceedings of the republic scientific-practical conference. Tashkent, 2011. B 123-124.
5. Technical report of the Amu-Bukhara canal utilization department 2022.
6. Irrigation in Uzbekistan. Volume III. - Tashkent, Izd-vo "Fan", 1979. - 356 p.
7. Rubinova F.E., Kakurina E.G., Matveeva O.S. Changes in the flow of the Amu Darya under the influence of water management construction in its basin // Proceedings of SANIGMI, issue 77 (158), 1980. - P. 80-88.
8. Rubinova F.E. Changes in the flow of the Amudarya River under the influence of water reclamation in its basin // Proceedings of SANIGMI. - 1985. - Issue. 106 (187).-113s.
9. Rubinova E.F. Influence of water reclamation on the runoff and hydrochemical rivers of the Aral Sea basin // Moscow. Gidrometeoizdat- 1987. 160 p.
10. Hayitov Yo. Q. Scientific-practical considerations on the hydrology of irrigated lands (on the example of the Zarafshan oasis) // Problems and scientific solutions in increasing soil fertility, preservation, protection and restoration, Proceedings of the Republican scientific-practical conference, Bukhara, 2018. 20-24. B.
11. Hayitov Yozil Kosimovich, Khamdamova Dilovar Nurullaevna Hydrological bases for the use of drainage networks (in the case of the Bukhara region). MONOGRAFIA POKONFERENCYJNA SCIENCE, RESEARCH, DEVELOPMENT #26 v. 2 Poznan 27.02.2020- 28.02.2020 186-189
12. Hayitov Yo K Doctor of Geographical Sciences, Professor Jumaeva T. A, Bukhara State University Hydrological Assessment Of The Meliorative Condition Of Collector Drink Water In Bukhara Region.
13. Hayitov Yozil Kasimovich, Jumaeva Tozagul A'zamovna Reducing the mineralization of collector-zovur water and its use in agriculture Conference "Science and Education in Uzbekistan" No. 3 May 26, 2020 63-66
14. Hayitov Yozil Kasimovich, Jumaeva Tozagul Azamovna EFFICIENT USE OF WATER RESOURCES OF THE AMU-BUKHARA CANAL ACADEMIK. An International multidisciplinary Research Journal 30.05.2020.15-18