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THE CURRENT STATUS OF SPRING WATER RESOURCES AND THEIR EFFECTIVE USE METHODS

(In the example of the springs of Gallaorol district)

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Abstract:
The article is about the directions of using springs in Gallaorol district of Jizzakh region and their protection from anthropogenic factors. It was found that 11 springs are neglected, 67 springs are used by the population as a source of drinking water, 16 springs are in the center of special attention as holy destinations, and 19 springs are used as recreation and sanatoriums.

Keywords: Spring waters, Gallaorol district, rational use of springs, anthropogenic factor, protection of springs.

Introduction

Ghallaorol is located in the Western part of the Jizzakh region at 40001′17 north latitude and 67035′51 east longitude, that is, in terms of territorial division. The hydrological and hydrogeological condition of Gallaorol district is closely related to the geomorphological structure and climatic features of this region [1-3]. The hydrological and hydrogeological conditions affect groundwater. Areas rich in mountains are saturated with underground water due to the process of absorption of atmospheric precipitation [4]. Mountainous and sub-mountainous plain areas perform the function of the ground water conducting area. Underground water - springs are a wonderful treasure of nature, which can preserve their properties and existence for thousands of years. Groundwater available in mountain areas is also divided into several categories. Groundwater in these areas can usually be found in rock fissures or karst processes [5]. In such areas, there are other types of underground water, that is, interlayer underground water blocked by two-way impermeable layers is one of them. They are found under pressure and without pressure, depending on the environment. Due to the fact that the pre-mountain plain areas, cones in the form of a spread, and huge depressions between the mountains are composed of soft, porous particles, water penetrates well between these layers, and as a result of these processes, groundwater appears [6]. Depending on the environment and conditions of underground water, there are types such as ground water, interlayer water and hot water. Most of the springs in the Gallaorol district of Jizzakh have been used for many centuries as the main source of drinking water for the population, as well as for various other purposes [1, 7]. The rational use of springs is important, because at the moment when water has become a global problem, the development and implementation of the scientific basis of their effective use is considered one of the most important tasks. The purpose of using spring

water is inextricably linked with its chemical composition, biological composition, physical properties, and even geographical location, geological properties, and climatic properties.

Material and Methods

The object of research is all spring waters in the Gallaorol area, and water samples were taken from springs. The research was conducted during 2021-2023 using observation, comparison, meteorological measurement, and laboratory analysis methods. These springs are the primary and important source of drinking water for the people living in the mountainous regions of Gallaorol, and it is important to scientifically study the chemical and physical condition of the spring waters and to scientifically justify and study the ways of their effective use. As a first scientific step, the geolocation of the locations where the springs are located was determined using GPS. The identified locational results serve as a basis for the formation of a general map of the district's springs and their effective use in future studies.

Results and Discussion

The population was asked through a questionnaire and the current state of the springs was observed, and the data was formed in the form of a table (Table 1). According to the purpose of using the springs by the inhabitants of Gallaorol, they were studied on the basis of categories called "Neglected", "For drinking and domestic purposes", "As a sacred (pilgrimage) place", "As a place of rest" (Table 1).

Table 1. Goals of use of spring water resources of Ghallaorol district

№	Spring number	Neglected	For drinking and domestic purposes	As a sacred (pilgrimage) place	As a place of rest
1	№ 1		+		
2	№ 2		+	+	+
3	№ 3		+		
4	№ 4		+		
5	№ 5		+		
6	№ 6	+			
7	№ 7		+	+	
8	№ 8				
9	№ 9		+		
10	№ 10		+		
11	№ 11		+	+	+
12	№ 12		+		
13	№ 13		+		
14	№ 14		+		
15	№ 15		+		+
16	№ 16	+	+		
17	№ 17		+		
18	№ 18		+		
19	№ 19		+		
20	№ 20	+	+		+
21	№ 21		+	+	+

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22	№ 22		+		
23	№ 23		+		
24	№ 24		+		
25	№ 25		+		
26	№ 26		+		
27	№ 27	+	+		
28	№ 28		+		
29	№ 29		+		
30	№ 30	+	+		+
31	№ 31		+	+	
32	№ 32	+	+		+
33	№ 33		+		
34	№ 34	+	+		
35	№ 35		+		+
36	№ 36		+		
37	№ 37		+		
38	№ 38		+		
39	№ 39		+		+
40	№ 40		+	+	
41	№ 41		+		
42	№ 42		+	+	
43	№ 43		+		+
44	№ 44		+		
45	№ 45		+		+
46	№ 46		+	+	+
47	№ 47		+	+	
48	№ 48		+	+	+
49	№ 49		+		
50	№ 50		+	+	
51	№ 51		+		
52	№ 52		+		
53	№ 53		+		
54	№ 54		+		
55	№ 55		+	+	+
56	№ 56		+		
57	№ 57		+		
58	№ 58		+		
59	№ 59		+		
60	№ 60		+	+	+
61	№ 61		+		
62	№ 62		+	+	+
63	№ 63		+	+	
64	№ 64	+	+	+	+
65	№ 65	+	+		
66	№ 66	+			
67	№ 67		+		+
68	№ 68	+	+		+
69	№ 69		+		
70	№ 70		+		

According to the above table, in the regions where springs are located, most of the population uses springs as a source of drinking water. 67 out of 70 springs perform such a function. 96% of springs in the district are used for drinking and economic purposes. 11 springs are overlooked by people, they are rarely used or almost not at all (table 1).

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Springs are affected by anthropogenic factors, so it is important to protect them. Covering the springs is a guarantee of keeping them clean, otherwise the surroundings of the springs will be filled with domestic and organic (animal waste, plant waste) waste, which will change the natural chemical composition of the water. Below is the state of protection of springs in the area (table 2).

Table 2. State of protection of spring water resources of Gallaorol district

№	Spring number	The top of the spring is open or closed	№	Spring number	The top of the spring is open or closed
1	№ 1	Closed	36	№ 36	Closed
2	№ 2	Closed	37	№ 37	Closed
3	№ 3	Closed	38	№ 38	Closed
4	№ 4	Closed	39	№ 39	Open
5	№ 5	Closed	40	№ 40	Closed
6	№ 6	Open	41	№ 41	Open
7	№ 7	Closed	42	№ 42	Closed
8	№ 8	Closed	43	№ 43	Closed
9	№ 9	Open	44	№ 44	Closed
10	№ 10	Closed	45	№ 45	Closed
11	№ 11	Closed	46	№ 46	Open
12	№ 12	Open	47	№ 47	Closed
13	№ 13	Closed	48	№ 48	Closed
14	№ 14	Closed	49	№ 49	Closed
15	№ 15	Closed	50	№ 50	Closed
16	№ 16	Open	51	№ 51	Closed
17	№ 17	Open	52	№ 52	Closed
18	№ 18	Closed	53	№ 53	Closed
19	№ 19	Closed	54	№ 54	Closed
20	№ 20	Open	55	№ 55	Open
21	№ 21	Open	56	№ 56	Closed
22	№ 22	Closed	57	№ 57	Closed
23	№ 23	Closed	58	№ 58	Closed
24	№ 24	Closed	59	№ 59	Closed
25	№ 25	Closed	60	№ 60	Closed
26	№ 26	Closed	61	№ 61	Closed
27	№ 27	Closed	62	№ 62	Closed
28	№ 28	Open	63	№ 63	Closed
29	№ 29	Closed	64	№ 64	Open
30	№ 30	Open	65	№ 65	Closed
31	№ 31	Closed	66	№ 66	Open
32	№ 32	Open	67	№ 67	Open
33	№ 33	Closed	68	№ 68	Open
34	№ 34	Open	69	№ 69	Closed
35	№ 35	Open	70	№ 70	Closed

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According to observations, it was found that 50 of the springs are covered and 20 are open, that is, 71% of the springs in the area are covered and 29% are open (table 2).

Conclusion

29% of the springs have open, which means that there is a risk of various diseases (gastrointestinal diseases, infectious diseases, etc.) in the users of these springs. Cleaning and drinking water polluted by organic and various household wastes creates economic costs.

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