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METHODOLOGY OF MANAGEMENT MONITORING FOR FLOW RIVERS ISSUE ISSUE

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Abstract

The article reviewed the development of the all the goals of the UzB are "... shaped in the form of global aspirations, and each government sets its own national goals, in cases where several states are monitoring a single trans boundary watershed, efforts should be made to agree on targets for all countries. Water quality comparison.

Keywords: monitor water, single trans, water quality, step-by-step monitoring, mathematical expectations, data matrix.

1. Introduction

According to the 2030 Agenda for Sustainable Development, all the goals of the UzB are "... shaped in the form of global aspirations, and each government sets its own national goals, taking into account global goals, but not national ones. aimed at "improving water quality" in a global sense, taking into account the conditions. To determine if water quality has improved, it is necessary to monitor water quality and compare its results with water quality standards - with quality (i.e., initial conditions) or with quality indicators before any form of management is introduced. Due to the natural variability of water bodies, it is almost unreasonable to set standards or targets for specific parameters of water quality used on a global scale. In this regard, it is recommended that each country define "good quality of natural water" and set targets that can be assessed accordingly. However, in cases where several states are monitoring a single trans boundary watershed, efforts should be made to agree on targets for all countries.

2. The main part

To determine the good quality of natural waters, standards or targets must ensure that the aquatic ecosystem is not harmed and that there is no unacceptable risk to human health as a result of the targeted use of water without prior treatment. Therefore, in practice, the concept of "good quality" is applied globally, but the parameters used to determine whether the

task of ensuring "good quality" has been performed may vary depending on the type of water body, the natural variation of the water, and the expected level. Water use. In many countries, specific water quality parameters related to water use, such as drinking water or irrigation, have parameters or objectives related to the natural quality of the aquatic ecosystem.

A description of the proposed approaches in defining national goals to assist countries where such tasks do not exist is provided. Some detailed examples of the development of national goals and guidelines have also been published and posted on the Internet (e.g., ANZECC and ARMCANZ, 2000). Water quality that contributes to the good quality of an ecosystem is usually assessed by certain biological parameters or monitoring methods, such as chlorophyll content, species diversity and richness, or the presence or absence of individual indicator organisms. Such approaches require detailed information on natural, harmless water communities that may not be available in many countries. Nevertheless, biological methods can be included in the assessment of "good quality of natural waters" as progress has been made in establishing monitoring networks and obtaining additional information, with physical and as a minimum starting point for all countries to report on the indicator. a simple approach based on chemical parameters is recommended.

Water quality comparison

2. In the first stage of step-by-step monitoring, a simple indicator is used to classify the quality of water bodies based on the compliance of monitoring data with certain target values of the main parameters. For all monitoring sites located in the watershed, the monitoring indicators for all key parameters are compared with the target indicators. This index is defined as the ratio of monitoring indicators to the target indicators:

$$C = (\text{compatibility for purchase}) * 100$$

where n compliance - the number of monitoring values corresponding to the target indicators; numeral is the total number of monitoring indicators.

It is recommended that you use only data from the last three years to calculate this indicator to make sure you are comparing the results with the latest and worldwide.

Monitoring data can inevitably encounter errors during sampling, analysis,

and subsequent processing. Therefore, to classify water bodies as "good" water bodies, a maximum value of 80% compliance is set. Thus, if at least 80 percent of the monitoring data obtained from all monitoring stations in the watershed meet certain target indicators, the watershed is classified as a watershed with good water quality.

3. Results. The results of the classification of private water basins in terms of the general condition are summarized at the national level in terms of the ratio of the share of well-classified water bodies to the total number of classified water bodies: quality water basins

$$\text{percent} = (ng \div nt) \times 100 \text{ ha}$$

where:

ng is the number of water bodies classified in general good condition;

nt is the total number of classified water bodies.

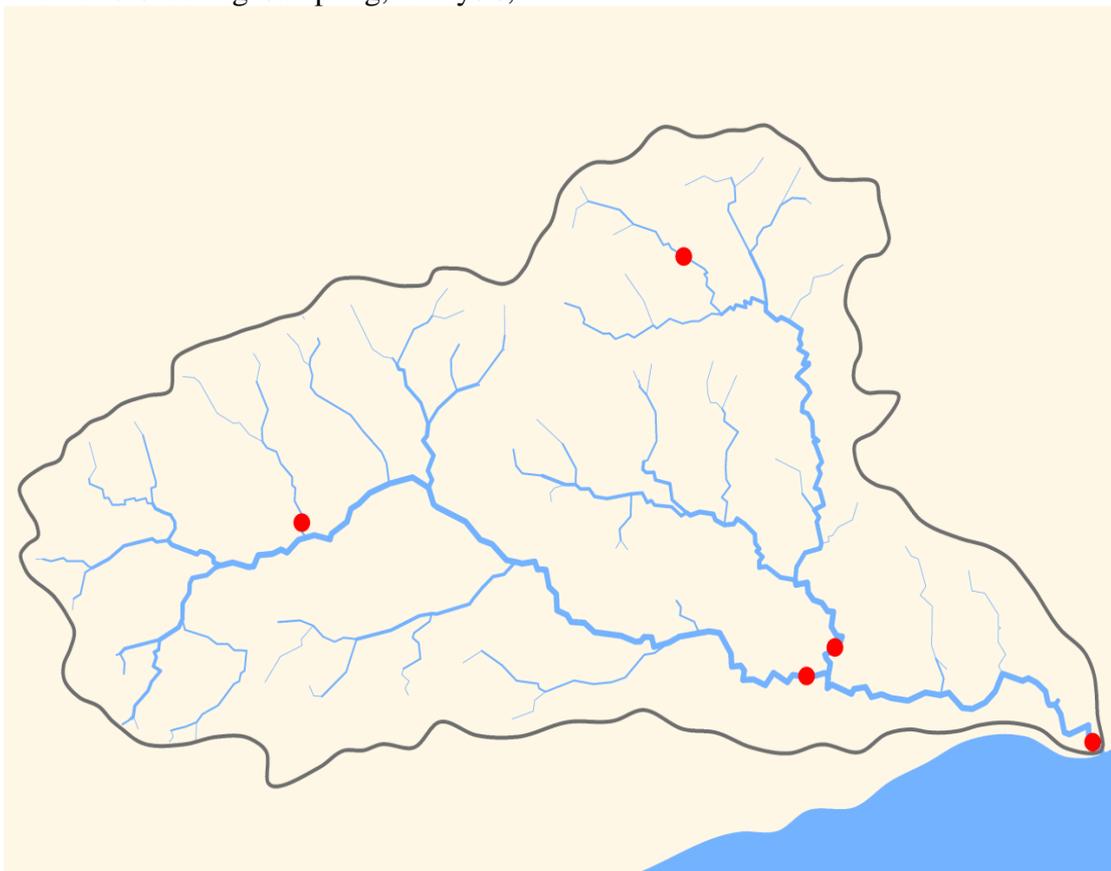


Figure 1. For this example, a river basin as well as an observation deck at the bottom of the river were used

This example shows the process of identifying and then classifying water bodies for a river basin, as shown in Figure 1, as well as the process of calculating the

indicator. The map shows the channel of the imaginary river, as well as the five observation points included in the monitoring network. There is a main stream

that flows into the ocean and has an observation point at its head. However, the river can carry its water to the lake and even to another country. Based on this point or boundary, the river is defined as a

watershed. The next stream is the confluence of the two main streams; The observation point of both streams is near their location and above them.

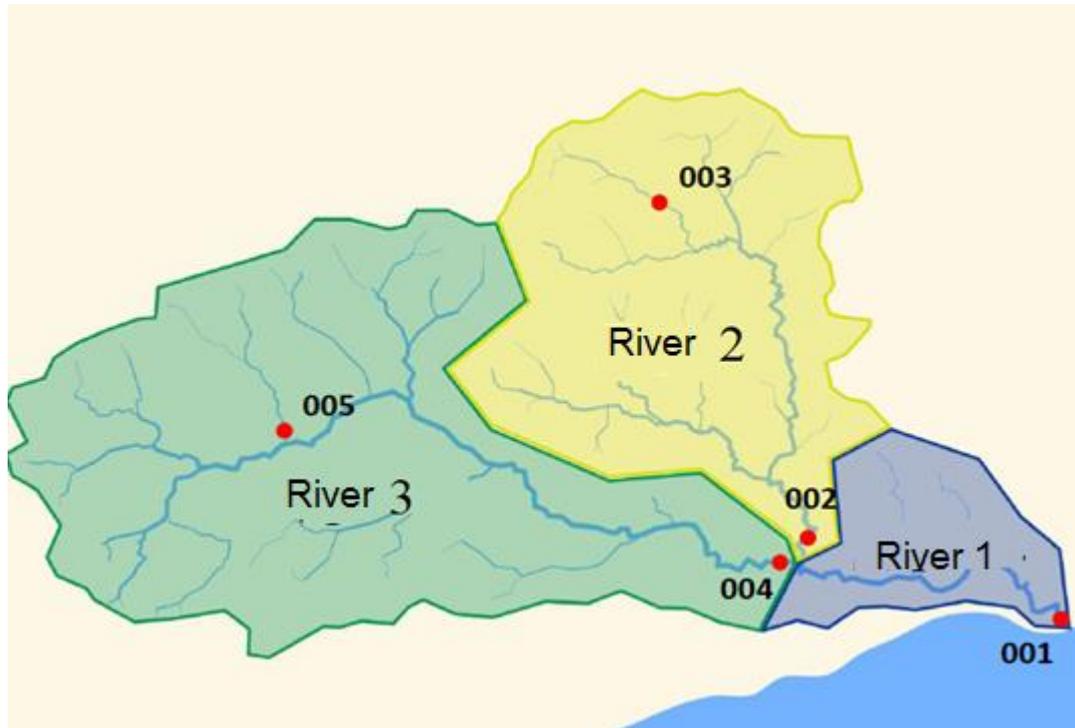


Figure 2. From the example in Figure 1, the river basin is divided into three water basins

Thus, as a result of the identification process, three separate and important water basins appear as a unit of account in the calculation of the indicator.

In the next step, once the states have identified their watersheds, the target indicators need to be determined to classify the watersheds as good watersheds. Although it is possible to set different target values for different water bodies (e.g., rivers, lakes, or groundwater basins), the

imaginary country identified only one set of target values for all three water bodies in this example, which is 1-. shown in the table. The table also contains a description of the target type, which should not exceed the upper threshold value, the lower value below which the indicator values should not fall, or the measurement data to determine the given water basin. "good" as a set of values that should be.

Parameter name	Parameter short name	Integer value	Unit number	Whole type
Solution oxygen	SO	6	mg/l	bottom
Electrical conductivity	EC	300-500	mksM/sm	range
pH	pH	6-8	-	range
Orthophosphate	Oph	0?035	Mg R/l	top

Table 1.

According to this methodology, a water basin is defined as a water body with “good” water if 80% of the results of the analysis on the basic parameters of the samples taken from the water basin

correspond to their target indicators. To do this, the results of the analysis at each monitoring site in a given watershed must be evaluated by them.

Conformity to objectives. Then the ratio corresponding to the values determined by the results of the analysis for each water basin should be calculated. For reproductive purposes, this document provides a step-by-step approach in calculating this indicator.

Table 2 shows the results of the analysis on the five key parameters of the samples taken at "Station 001" for the 2018 reporting period. Table 2 shows the data in

River 1					
Station 001					
Number	OPh (mg/l)	EC (mksm/sm)	pH	OPh (mg R/l)	SO (mg N/l)
23.01.2018	5,2	410	7,0	0,16	0,71
20.02.2018	8,0	450	6,8	0,18	1,09
04.04.2018	5,4	432	7,0	0,20	0,43
10.05.2018	5,8	455	7,0	0,26	0,62
12.06.2018	6,9	429	7,1	0,15	1,90
04.08.2018	9,0	401	7,3	0,07	2,10
21.09.2018	7,2	434	7,2	0,10	2,50
19.10.2018	7,2	398	7,1	0,16	1,06
15.11.2018	7,9	389	6,9	0,18	0,46
24.12.2018	6,6	390	7,0	0,25	0,04

Table 3. The degree of compliance with the target indicators for the values of the main parameters shown in Table 2, as

the watershed of River 1, which has only one observation deck. Data were collected in a similar manner at other observation sites in this example. If there are multiple observation sites in a single watershed, they should be grouped accordingly.

Table 2. The values of the sleep analysis for the main parameters of the water basin with a single observation site

well as the ratio of the values corresponding to the target values for each key parameter (target) (last row)

River 2					
Station 002					
Number	OPh	EC	pH	OPh	SO
23.01.2018	0	1	1	0	1
20.02.2018	1	1	1	0	1
04.04.2018	0	1	1	0	1
10.05.2018	0	1	1	0	1
12.06.2018	1	1	1	0	0
04.08.2018	1	1	1	0	0
21.09.2018	1	1	1	0	0
19.10.2018	1	1	1	0	1
15.11.2018	1	1	1	0	1
24.12.2018	1	1	1	0	1
Compatibility percentage	70	100	100	0	70

According to the results of the analysis, the next step is to assess the compliance with the targets, while the individual values obtained as a result of the analysis are compared with the targets and their level of compliance is calculated. The easiest way to do this is to create a separate table in which the result for each key

parameter is evaluated according to its value relative to the target indicator, namely:

- "1" is set if the goal is achieved;
- If the target is not reached, "0" is set.

The results of this process at station 001 of the 1st river basin are given in Table 3. Each value obtained as a result of the

analysis was rated "1" if it corresponds to the set value, or "0" if the goal is not achieved. Based on these ratings, it is possible to calculate the analysis indicators that correspond to the target indicators, as in the last row of Table 3, for each key parameter. None of the orthophosphate (RP) indicators meet the target, resulting in a zero percent compliance for this key parameter. Dissolved oxygen (RK) and total oxidized nitrogen (SOA) values correspond to the target values in 70% of cases, and permeability (EP) and pH values correspond to 100% target values.

A similar procedure was followed in the rest of the observation areas ("station 002 to station 005"), but they are not specified in this document because the work steps are the same.

Based on the suitability of each monitoring site, it is possible to calculate the indicators that correspond to the target indicators for the entire water basin. Table 4 shows the percentage of compliance indicators calculated for each of the five monitoring sites and distributed for each of the key parameters distributed by the reservoirs. For each plot of monitoring, a percentage of all five key parameters is obtained for the ratio of the average key parameters to the target value ("Station

Compatibility in%" series). In the next stage, compliance with the target indicators should be calculated at the level of the water basin (series "Compliance of water bodies with%"). If there is only one observation point in the water basin, then the value in the line "Station matching in%" can be displayed directly (see Table 4, column "River 1"). However, if there are multiple observation sites in the watershed, the percentage of compliance at the watershed level can be calculated by calculating the percentage of compliance at each monitoring site (see Table 4, "River 2" and "River 3"). In both cases, the series "Compliance of Water Bodies with%" represents a percentage of the values corresponding to their key indicators during the reporting period.

Finally, the water quality of water bodies is classified as "good" if the values obtained for the water basin in question correspond to the target values in at least 80% of cases, or to the target values if the target values are less than 80. is rated "bad" if appropriate. % cases (see Table 4, "Classification of water quality in the watershed").

Table 4. Classification of water basin analysis indicators as a percentage of their target indicators

Percentage of key match	River 1		River 2		River 3
	Station 001	Station 002	Station 003	Station 004	Station 005
SO	70	90	90	70	90
EC	100	100	100	100	100
pH	100	90	90	100	80
Oph	0	90	80	10	40
SO	70	100	100	100	100
Stansiyalarning mosligi% da	68	94	92	76	82
Compatibility of water bodies in%	68		93		79
Classification of water quality in the watershed	Bad		Good		Bad

4. Conclusion

In the final stage, this indicator is expressed as the ratio of water bodies with "good" water quality:

(Monitoring Manual Installed for UDG 5. Step-by-Step Monitoring Methodology for Indicator)

$$5.3.2 = ngnt \times 100 = 13 \times 100 = 33.3\%$$

The country considered in this example may indicate that, according to, water quality is "good" in 33.3% of water bodies.

References

- [1] Abdullaev A.A., Aliev R.A., Ulanov G.M., Principles of Building Automated Control Systems for Industrial Enterprises with Continuous Production. M.: Energy 1995., 440 p.
- [2] Aliyev E.M., Yakubov M.S. Programs for algorithms adaptation of mathematical models of technological enrichment processes / Algorithms. Issue 46 Tashkent: RICE of the Academy UzRes, 1998. C 85-91.
- [3] M.S. Yakubov, T.A. Khujakulov, M.M. Khusanov International Scientific and Technical Conference promising information technologies "The role of environmental assessment in the preparation and reconstruction of water sector projects" SAMARA, 2017 1040-1044 p.
- [4] T.A. Kujakulov. The problems of information and telecommunication technologies. The Republican Scientific and Technical Conference " Tashkent 2015. 86-88 p.
- [5] M.S.Yakubov. The concept of competitiveness and economic management system. International conference "Actual problems of development of info-communications and information society". Tashkent 2015. 609-614 p.
- [6] T.A. Khujakulov., A.Oteniyozov., E.Holikov. "Problems of Integrated Water Resources Management". Materials of the International Scientific and Practical Conference from 190-191.
- [7] M.Yakubov, T.A.Khujakulov "Materials for the International Scientific and Practical Conference from 188-190.
- [8] Buriev S.B., Hojjiyev S.O. Ecological problems in agriculture: International scientific and practical conference. collect -Bukhoro, 2003. -B. 418-419.
- [9] Abramov N.N. "Water Supply" M.: "Stroyizdat", 1982. - 480 y.
- [10] Abramov N.N., Pospelova M.M. et al. "Calculation of water supply networks. -M.: "Stroyizdat", 1983.-278 y.
- [11] Abramov N.N., Theory and method of calculation of water supply and distribution cysts. -M.: stroiizdat, 1972.-288c..
- [12] A.I. Rodionov, V.N. Klushin, V.G. Cister. Technological processes of environmental safety. Fundamentals of environmental studies - Kaluga: N. Bochkareva Publishing House, 2000.
- [13] Martsul V.N., Kaporikov V.P. Technical Basics of Environmental Protection. Minsk. BSTU, 2005.
- [14] Ashirov A. Ion-exchange treatment of wastewater, solutions and gases. M.: Chemistry, 1983.
- [15] IB Chebakova Wastewater treatment / Training. Allowance Omsk: Publishing house of OmSTU, 2001.
- [16] Vurdova N. G. Fomichev V.T. Electrodialysis of natural and waste water. M.: DIA, 2001.
- [17] Ergashev S. A., Otoboev S., Sharipov R. Suvning inson Sayedagi ekologik miiyati. T: Fan, 2009.