Improvement of the State Water Cadastre's Management System

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Abstract: The challenges of monitoring state water objects and creating a database based on geographic information systems for the upkeep of the state water cadastre are taken into consideration in this article. On how to enhance the state water cadastre systems, a decision is made.

Keywords: water objects, State water cadastre, monitoring of state water objects, GAT model.

The use of geographic information systems (GIS) to regulate information on water users, create an automated water cadastre based on quality and quantity indicators of water resources, and govern effective use of water resources is one of today's most crucial challenges. Utilizing geographic information systems, it is crucial to quickly monitor water bodies, water regimes, water quality, and water consumption in this respect (GIS). The fundamental issue with using GAT models for the management and use of water resources is their poor accuracy, which is a result of the models' construction from low-resolution satellite imagery and the use of antiquated analytical techniques.

The state water cadastre is an organized database that is based on the amount and types of water resources. Information on the hydrological features of surface water, groundwater, and water consumers is gathered through the water cadastre.

According to Z.S. Shokhujayeva [1; p. 19], the expansion of agricultural production also affects the amount of irrigation water needed to increase the efficiency of irrigated land. Due to a lack of water, it demands effective water use for irrigation.

A database and map on the analysis of the water requirements of agricultural crops in the evaluation of water consumption of irrigation systems based on MODIS satellite pictures were established by Sh.B. Akmalov [2; As a result of scientific study conducted by [8].

According to R.I. Oteniyazov [3; 21 p.], fluctuations in flood levels were investigated using geo-informational technologies and aeronautical photos.

J. Kh. Djumanov [4; p. 18] used geo-information technologies to study the condition of subsurface water and used geo-information-mathematical models to the resolution of hydrogeological issues.

G. Ye. Omarova [5; p. 14] conducted research utilizing a database, accounting for the water shortage circumstances, and analyzing the water supply to irrigated fields as well as the necessary water demand for the production of agricultural products. He emphasized wealth views and forecasts.

Without discounting the aforementioned research, an automated system of state water cadastre objects was developed with the aid of geoinformation technologies and remote sensing of objects. This system includes irrigation and reclamation facilities in the regions, associations of water consumers, control wells used to monitor groundwater, reservoirs, and detailed information about rivers, canals, and pumping stations.

Effective use of state water cadastre objects and water resources, comprehensive development of regions, provision of information for improving the ecological and meliorational condition of land resources, protection of water bodies protection zones and elimination of external side effects, farms serves to develop measures for the implementation of state programs on optimization of pastures, placement of agricultural crops, implementation of cluster system in hydromodule regions based on the demand of plants for water, and reconstruction of irrigation and melioration facilities.

The primary goals of waterbody monitoring:

➢ Predicting and preventing causes that have a detrimental influence on water quality in bodies of water, as well as implementing actions to reduce the negative repercussions of these factors;

➢ Evaluating the efficiency of water-body protection methods;

➢ Providing information to coordinate state control over bodies of water;

➢ Control and management of water body conditions, utilization of water resources, and specifically protected waterways;
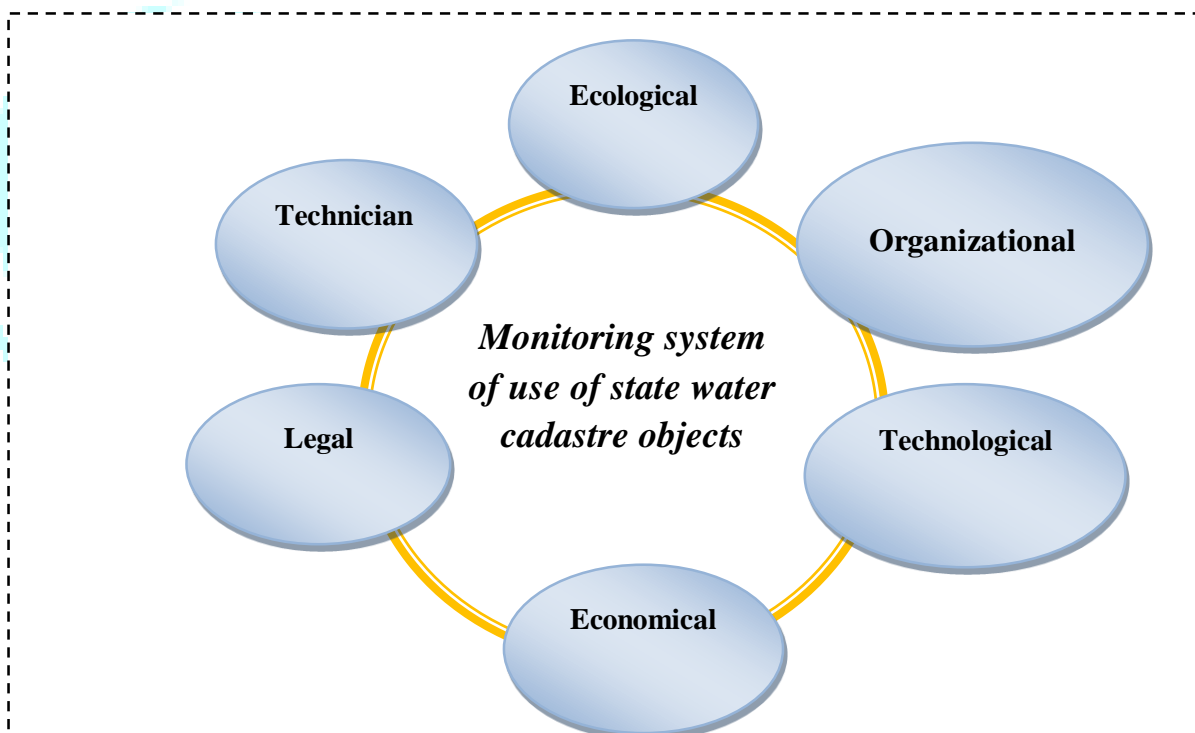

Figure 1. The structure of the GAT model of the monitoring system of the use of state water cadastre objects

(*Note: The structure of the GAT model was created as a result of fundamental and applied research conducted by the author.)

The assessment and forecast of changes in the status of water bodies is the foundation of all areas' economic usage of water [3]. However, in order to overcome this problem, the data from the State Water Cadastre and the State Monitoring of Water Objects must be used completely.

Currently, efforts are being made to enhance our country's water cadastre system. The topic of automating the water cadastre system, for example, has been studied, and it will address the following difficulties:

1. Control of water cadastre management in our country;

2. Finding the characteristics of water cadastre data, constructing a data processing method, and determining the link between real estate and water cadastre.

3. It comprises of priority activities such as establishing a model of the water body database.

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