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Date 05-10-2021

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التاريخ:

الموافق:

REVIEW REPORT

of the dissertation of Arystambekova Dinara Dandybaevna titled «Calculation of spring flood runoff on plain rivers of Kazakhstan» for the degree of doctor of philosophy (PhD), specialty 6D061000 – Hydrology

The dissertation by Arystambekova D.D. on the topic “Calculation of spring flood runoff on plain rivers of Kazakhstan” is devoted to the study of statistical characteristics of spring runoff of the main rivers of the basins located in the plain zone of Kazakhstan: Zhayik-Caspian, Tobyl-Torgaysky and Nura-Sarysu.

The study of the characteristics of spring flood is an important task. Since, in the steppe zone of Kazakhstan, runoff for floods accounts for 60-70% of the annual runoff, and in arid and semi-desert zones - 98-100%.

The following can be attributed to the merits of the scientific research of the applicant: the series of observations are given over a long period; the effectiveness of bringing the norms and coefficients of variation of the layer and the maximum runoff of spring flood to a long-term period was evaluated; natural runoff values of regulated rivers were restored; characteristics of spring runoff for different periods were determined; the accuracy of the calculation of runoff parameters were evaluated; values of spring runoff characteristics for the considered periods were determined; a forecast of spring runoff elements for 2025 and 2030 was compiled using the methodology was developed for long-term forecasting of a spring runoff layer based on a forecast of weather elements by a harmonic analysis method.

It is worth noting the personal qualities of the applicant independence in the study, the ability to analyze and apply the necessary methods for processing hydrological data.



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In the period from July 19 - August 18, 2016, Arystambekova Dinara underwent a foreign scientific internship and showed excellent knowledge on the topic of the dissertation. She visited the university library and collected an electronic database of literature on the topic of the dissertation. During the internship, a scientific article was jointly prepared for publication in the international highly rated journal on the topic "Impact of Reservoirs Construction on Flood Characteristics of the Rivers of Kazakhstan during Spring Season". In addition to that, while staying in Jordan, Arystambekova D. participated in a scientific seminar on organizing the Jordan University of Science and Technology and organizing food and rural industries at the UN in the Dead Sea on the topic "Groundwater Management in the Azraq Basin".

The dissertation research by Arystambekova D. is a completed scientific work and is distinguished by novelty, practical significance, complexity of analysis and logical harmony.

In connection with the above, the author of this scientific work Arystambekova Dinara Dandybaevna deserves the Doctor of Philosophy (PhD) degree in the specialty 6D061000 - Hydrology.

**International Supervisor,
Professor of Water and Environmental Engineering,
Jordan University of Science and Technology,**

Hani Abu Qdais