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## Investigation of stable vertical density structures formed in water bodies in zones of active technogenesis on an example of the Solikamsk-Bereznikovsky industrial hub (RF)

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Due to the active development of the Verkhnekamskoye deposit of potassium and magnesium salts (Russia) not only watercourses - wastewater receivers, but also water bodies that are not directly affected by technogenic impact fall into the zone of its influence. This impact, due to the high density of brines, is very important from an environmental point of view, but it is not recorded within the framework of traditional production monitoring. The carried out field observations show that the content of macrocomponents in water is significantly heterogeneous in depth and is characterized by the presence of a sharp jump of density. The concentration of salts in the near-bottom horizon is more than an order of magnitude higher than their content in the near-surface layer.

The situation is significantly complicated by the fact that during spring floods and during the passage of rain floods, less mineralized, fresh waters "slide" without mixing with more "dense" water masses located below the density jump layer. Therefore, the efficiency of washing of these reservoirs is significantly reduced. Since water intake for production purposes, as a rule, is made from the bottom horizons, this stratification creates serious problems with ensuring sustainable water supply to production facilities.

To solve these applied problems, the study of the formation of stable density structures was carried out on the basis of combined field studies and computational experiments performed on the basis of a hydrodynamic model in a full 3D formulation in a non-hydrostatic approach. The studies carried out made it possible to evaluate and compare various technologies for increasing the sustainability of technical water supply from these water bodies, to choose the most efficient of them.

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