Materials of Conferences

ECOLOGICAL MONITORING OF RESERVOIRS OF VOLGOGRAD AND ITS SUBERBS WITH DIFFERENT DEGREE OF ANTHROPOGENIC INFLUENCE

Bukatin M.V., Rebrova D.N., Ovchinnikova O. U., Krivitskaya A.Y., Chernikov M.V., Nikolayeva I.Y., Sarangov O.V.
Volgograd, Russia

Hydrosphere is a natural accumulator of the majority of polluting substances, entering the atmosphere and lithosphere.

Presence of polluting substances in the water influences vital functions of some living organisms, functioning the whole water system and people, whose residence is in the coastal zone.

The goal of our work is monitoring of ecological welfare in reservoirs of Volgograd with different level of anthropogenic pollution.

The following reservoirs were chosen to be researched: the Angarsky pond, the Sudomoika eric, a reservoir in the place called Lesobaza which are located in different topodemes of Volgograd and its suburb.

In the process of investigation it was made a repeated water sampling from these reservoirs and organoleptic properties and chemical water composition of them were examined according to 14 indices (pH, petrochemicals, Cl^-, NH_4+, O_2, permanganate oxidation, biochemical oxygen consumption, PO_4^-, NO_2, NO_3, hardness, Ca^{2+}, Mg^{2+}, HCO_3^-).

Organoleptical analysis, the results of the experiment to test sediment and smell of water showed that the water of all the reservoirs is of midrange of pollution, nonpotable, might adversely affect the population of Angarsky settlement and camp settlement on the bank of the eric Sudomoika, as this water is used by some part of the population for cooking.

The results of hydrochemical investigation show that the Angarsky pond, the Sudomoika eric are tipically sweet reservoirs, but the reservoir in the place called Lesobaza is saltish. Maximum allowable concentrarion of the analyzable substances in the Angarsky pond and Sudomoika are in the limits of the possible meanings. As for the reservoir in the place called Lesobaza, maximum allowable concentrarion of magnesium, calcium are increased, and high mineralization takes place here that can be connected the presence of bischofites.

Thus, the Angarsky pond can be considered as the cleanest reservoir, the most polluted is the reservoir in the place called Lesobaza.

The work was submitted to international scientific conference «Monitoring of an environment» (Italy - Rome, Florence, September, 9-16, 2008. Came to the editorial office on 20.07.2009.

HYDRAULIC ENGINEERING PROTECTION OF COASTS OF WATER OBJECTS

Kitaev A.B., Mikhailov A.V.
Perm State University
Perm, Russia

The problem of human adaptation to floods has universal importance. Floods are usually observed at the territories which are rich with water and fertile flood-lands. There is a constant conflict between the necessity of coastal territory reclamation and unavoidable losses from floods.

In Russia about 50 thousand km^2 are flooded annually. The area of the territories which have a risk to be flooded amounts from 400 to 800 km^2. 300 cities and more than 7 million ha of farmlands fall into the flooded area. In Russia the areas with frequent flood are the North Caucasus, the Primorsky Kray, Sakhalin and Amur regions, Transbaikalia, the Middle and South Ural, Nizhnaya Volga.

At studying of high seasonal floods at the Middle Ural the materials of supervision of Perm university scientists with 1902 for 2005 are used. Forwarding, statistical, design methods are used.

The reason of high seasonal floods at the Kama river basin is the spring snow melt with the extremely big snow bank or (and) a friendly spring character. Over the last 100 years 1902, 1914, 1926, 1957, 1965, 1969, 1900, 1991 got the notoriety, when within the whole Kama basin there were observed floods which caused the inundation of banks, settlements and enterprises. Great damage was caused by the extremely high spring flood in 1979. In Perm region 11 cities and 86 small settlements were damaged.

At some places water rose up to 5-11 m, 7200 dwelling houses were flooded, bridges were broken, 338 km of road, 11 km of embankments, 11 km of water pipe -lines, 16 km of sewerage networks, 11 km of LHV were washed out.

Ice gorges are more characteristic for rivers of the Middle Urals and lead to great water level rises. On the Upper Kama level rises measure up 2,0-2,5 m. On Pilva, Kutima,Yazva, Velva, Obva and on a number of other rivers – from 0,5 to 2,0-2,5 m. The highest level rises are registered on the Chusovaya river near the village Kyn (2,8 m), at the Iren river near the village Shubino (2,7 m), and on the Silva river near the village Podkamenoe (3,4 m). Often there occur ice blocks within the transient regions of the Kama water storages on the Kama river feeders.

Due to the heavy snow cover rivers usually are free from frazil or there is not much of it. However, at weather conditions in the beginning of winter (1928, 1937, 1947, 1949, 1966) frazils can sharply appear and present a danger for hydrotechnical constructions. These conditions are the following: rapid air temperature falls at insignificant snow cover that lead to small