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HYDRODYNAMIC AND GEOMECHANICAL STABILITY OF DUMP TERRITORIES OF MINING AND ELECTRIC POWER ENTERPRISES

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Purpose. Substantiation the criteria of hydrodynamic and geomechanical stability of waste dumps and adjacent territories by results of comprehensive study of technogenic mode patterns.

Methodology. The study was carried out through field methods for determining the mechanical properties of rocks, monitoring the hydrodynamic mode of groundwater, geophysical methods for studying the state of dump massifs and adjacent areas, laboratory tests of physical and mechanical and water properties of dump rocks, mathematical modeling of hydrodynamic and geomechanical state of the massif.

Findings. Patterns of technogenic groundwater mode developing on rock dump sites are defined.

An assessment of geomechanical stability of waste dumps and their elements is performed under the conditions of wetting. Forecast of risk of negative hydrodynamic and geomechanical processes occurrence due to waste rock dumps construction and exploitation is provided. The impact of waste dump construction and operation on the hydrodynamic and geomechanical condition of technogenic disturbed areas was assessed. Engineering measures to increase the hydrodynamic and geomechanical stability of the disturbed territories were substantiated.

The results include research conducted within projects funded by private mining and energy companies in Ukraine.

Key words: waste rock dump, groundwater, hydrodynamic and geomechanical processes, slope stability analysis, mathematical modelling

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