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CONTENT AND ABSTRACTS

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Sumalan Ioan, David Ioan - A Simplified Method to Represent Singularity Conditions for Groundwater Flow by Finite Volume Method (Case Study MODFLOW) .....3

**Abstract-***Numerical methods used in the groundwater flow modelling recorded a large increasing within last decades because of continuously development of the methods, pre-and post processing techniques and not least because of the evolving skills of users. In the vicinity of the singularities encountered in the numerical modeling techniques different results are obtained when numerical or analytical methods are used and by this way significant errors are occurred. The paper presents the representation of such singularities in the groundwater flow numerical modeling by using the Finite Volume Method applied for the case of MODFLOW model, one of the most used soft in the world for groundwater modelling. For a single partially penetrating well located in a homogeneous confined aquifer a numerical modeling was performed by using the numerical method with MODFLOW model . For the MODFLOW model the errors occurred in the classical modelling are significant. A new method for model correction is proposed by introducing equivalent permeability in the cells located in the vicinity of the well. Finally, a comparison between the results obtained by classical MODFLOW, modified MODFLOW and analytical method is presented.*

**Keywords:** *partially penetrating well, analytical method, Finite Volume Method, MODFLOW*

Seewald, G., Gutzke, T., Diaz, Joaquin, David Ioan- Spatial Assessment of Groundwater Information in large-scaled catchments-Areas .....9

**Abstract-***The management of groundwater resources for the supply of German cities, industry and suburban areas has become a important topic of public interest during the last years. Depressing headlines in the Rhein-Main-Area newspapers dealt with cracks in buildings as well as damaged woodlands and inundated agriculture areas as a result of varying groundwater levels. The management of groundwater is a complicated and sensitive task for all involved groups, especially the different water supply companies, the consultant engineers, the scientists and the governmental agencies. On initiative of the Water Supply Association and Darmstadt University of Technology, these groups co-operate on the development of a network-based information system for a well-organized groundwater management. Therefore, tools for collection, storage, evaluation and visualisation of groundwater-relevant information using network-based technologies have been analysed and implemented. The actual status of this project can be referred at: <http://www.grundwasser-online.de>*

**Keywords:** *groundwater, water supply, information system*

Beilicci Robert Florin, Beilicci Erika., Iliuta Cornel- 3D Modeling for Inflow of Water into an Excavation Pit.....15

**Abstract –** *This application display PMWIN program three-dimensional possibility to modeling groundwater flow and transport processes. Presented optimized models are based coupling MODFLOW program for modeling groundwater flow and MODOC program for solute transport model. Models are based to determined optimal injection / extraction flow and optimal position for excavation pit.*

**Keywords:** *groundwater flow, optimization algorithms*

Constantinescu Laura, Rogobete Gheorghe- Environmental Pollution by Heavy Metals resulting from the Waste Pile of the Thermocentral Plant in Timișoara .....19

**Abstract -***The paper presents the impact of the heavy metals from the ash pile of the thermocentral plant in Timisoara on the environment. Critical and toxic concentrations of heavy metals have been observed not only in the ash pile, but also in the groundwater, in the soil and in the spontaneous and cultivated plants of the area neighbouring the pile.*

**Keywords:** *pollution, impact, heavy metals, soil, groundwater, flora*

Wehry Andrei, Șteolea Petru - Irrigation by overflow in strips, combined with the Underground drainage, on sloping terrains .....23

**Abstract -***In this paper it is presented the design hydraulic calculation of irrigation by overflow in strips as well as an example of an irrigation preparation combined with the underground drainage on sloping terrains.*

**Keywords:** *irrigation, drainages, design on the sloping terrains*

Hălbac-Cotoară Rares- Drainage arrangements management for nutrients control .....27

***Abstract-*** *Eutrophication, caused by nutrients migration from agricultural lands, represents one major problem of our watercourses and lakes. Classical drainage arrangements from fields with high quantities of fertilizers are one of the main routes to the watercourses which can be used by nutrients. This paper presents methodologies for nutrients control with the help of drainage arrangements and wetland areas in order to avoid the mentioned unpleasant phenomenon.*

***Keywords:*** *nutrients, drainage arrangements, wetlands*

*Wehry Andrei, Orlescu Mircea, Costescu Ioana-* Culverts with hydrodynamic profiles in talus or with tympan, hydraulic laboratory studies and general prescription related to the static calculus of the inserted tympanes ...31

***Abstract-*** *The paper present the laboratory hydraulics studies results made on the classical ducts or the ducts with hydrodynamic profiles and a series of recommendations necessary to the static calculus of the culverts tympanes. The purpose of these research and prescription is assigned to the improvement of the functional parameters for this type of works.*

***Keywords:*** *culverts with hydrodynamic profiles, static calculus*

*Man Teodor Eugen, Receanu Ramona, Olaru Casauteanu Razvan -* Sustainable rural development in Europe. 39

***Abstract -*** *This paper presents the historical evolution of rural development in Europe based on the European Union policies which offers support to the countries and regions less developed or with structural difficulties. In Romania, rural space occupies a significant percent from national territory and because of that it imposes sustainable measures and policies regarding its adaption at european level. The paper will present also a comparative situation of some indicators which characterize the Romanian rural space with their homologues from European Union.*

***Keywords:*** *rural development, Europe, Romania*

*Hălbac-Cotoară Rares-* Efficiency and effectiveness in drought – irrigation integrated approach. Study case: Timiș County .....47

***Abstract-*** *Drought with its two associated phenomena's (aridity and desertification) represents major problems of our days and in Timiș County. The climatic changes together with human activities impact created favorable conditions for the appearance of drought and aridity phenomenon. This paper will present the situation in Timiș County regarding drought together with a possible drought management based on two important principles: efficiency and effectiveness of irrigation water use.*

***Keywords:*** *drought, irrigation, efficiency, effectiveness*

*Wehry Andrei, Pásztai Zoltan-* Oradea's Landfill Execution .....53

***Abstract-*** *Landfill insulation are designed to isolate waste from the environment by incorporating low or non-permeable layers. The barrier layer stops the generated leachate infiltration in the soil. Oradea's landfill insulation layers are typically designed and constructed from: natural clay, manufactured geosynthetic clay liner, geoelectryc monitoring system, geosyntetical HDPE membranes. The insulation procedure is based on high temperature joint of the HDPE membranes. Geotextiles are used to protect the layers from mechanical damage wich could be caused by heavy vehicles.*

***Keywords:*** *landfills, design, technologies*

*Wehry Andrei, Nuțaș-Vancia Gabriela-* Subirrigation limited by the secondary soil salting .....57

***Abstract-*** *Because not all the subsurface tile-drainage systems can be used reversible for subirrigation, in the following paper it is analyzed the needing for ground water level maintenance at a critical depth of salting in the irrigation arrangements in order to have a capillary transportation not higher than 1mm/day. In this way, it can be used only the reversible drainage arrangements in subirrigation from arid areas where the drainage is deeper and the sub irrigation can assure monthly irrigation rate of a maximum 300 mc/Ha.*

***Keywords:*** *subirrigation, critical depth of salting*

*Jura Cornel, Stăniloiu Cristian-* Optimizing Studies of the Sewerage Systems Made Up of Plastic Materials. 61

***Abstract -*** *We have elaborated a solution coherent study in order to determine the best profile of the urban sewerage system on the basis of some criteria. We take into consideration the solutions of the minimum investment, of the minimum exploitation expenses and of the yearly minimum equivalent expenses. We may also compare some alternatives, which admit the minimum of the material and energy consumption, the minimum of execution duration, etc. in order to make possible selections. The paper presents the optimizing process of the sewerage system –study case- for a group of urban places.*

***Keywords:*** *Sewerage systems, plastic materials*

*Jura Cornel , Brata Silviana-* Networks Optimizing for Plastic Pipes Water Supply Systems .....67

***Abstract -*** *In the paper, the studies of the optimal solutions for the structures of the water distribution systems are based on the criteria of minimum costs of investments, minimum exploitation costs and the annually*

*minimum equivalent costs. The optimized dimensioning of networks are elaborated in interdependence with another components of the system. For the application of the optimizing solutions it must to take into account the hydrodinamical and technological characteristics of plastic pipes.*

*Keywords:* *water distribution network, optimizing solutions, economical criteria*