1086-VL-2201 **Aleksey S. Telyakovskiy*** (alekseyt@unr.edu), Department of Mathematics and Statistics, University of Nevada, Reno, NV 89557, and **Jeffrey S. Olsen**, Graduate Problem of Hydrologic Sciences, University of Nevada, Reno, NV 89557. *Construction of approximate analytical solution to the porous medium equation.*

The porous medium equation appears in multiple applications, for example in hydrology it is known as a generalized Boussinesq equation. It can model filtration of polytropic gases through the porous medium, as well as movement of liquid in aquifers. We consider a zero initial condition, i.e. no substance is present at first, and the case of the special boundary conditions. Using dimensional analysis we can transform problem for the partial differential equation to a boundary value problem for a nonlinear ordinary differential equation. We construct polynomial in nature expression for the scaling function in terms of the similarity variable. (Received September 25, 2012)