Groundwater Flow Models Developed for ISWS Contract Report 2009-07

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Table 1 lists the groundwater flow models developed for ISWS Contract Report 2007 (Meyer et al., 2009). Meyer et al. (2009) provide much additional discussion of model development, structure, and applications. These groundwater flow models use the MODFLOW 2000 code (Harbaugh et al., 2000) and are for use on a PC running at least Windows XP (Service Pack 3). Although we offer no minimum computer requirements for running the models, they do require significant hard drive space, RAM, and processor speed. ISWS staff typically run the models and view model output on a PC with the following minimum hardware configuration:

CPU: 2.4 GHz
RAM: 2 GB
Available Hard Drive Space: 10 GB

We offer for download both model input and output files for steady-state models, but for transient models, we conserve space by offering only the model input files for download. For these transient models, the analyst must execute the models to generate the output files. The model files are compressed as .zip files for distribution purposes, each .zip file containing the files for one model and, for transient models, a key to the stress periods employed in the models. The .zip file names describe the included model.

Map files are included in a separate directory, maps.zip,

Model and map files should be unzipped and copied into a convenient directory on the user's machine, and the path of this directory should be entered as the **Working Directory** using the **Model\Paths to Models…** dialog box in Groundwater Vistas. Keys to stress period identification (in .xls format) will be helpful in interpreting model results.

To use the models, it is essential that Groundwater Vistas Version 5 (Environmental Simulations Inc., 1996-2007), together with all updates, be installed.

Table 1. Groundwater Flow Models

File Name	Model Name	Description	Input Files Included	Output Files Included
local_predevelopment_steady-state.zip	FinalNoWSS_NoAlgCon.gwv	Steady-state local-scale model, predevelopment (nonpumping) conditions	Yes	Yes
local_historical_and_projected_transient_high_q_cal_recharge.zip	AFinalCalRHQ.gwv	Transient local-scale model, 1964-2003 (historical conditions) and 2004-2049 (high pumping, calibrated recharge scenario)	Yes	No
local_historical_and_projected_transient_high_q_low_recharge.zip	AFinalLowRHQ.gwv	Transient local-scale model, 1964-2003 (historical conditions) and 2004-2049 (high pumping, low recharge scenario)	Yes	No
local_historical_and_projected_transient_low_q_cal_recharge.zip	AFinalCalRLQ.gwv	Transient local-scale model, 1964-2003 (historical conditions) and 2004-2049 (low pumping, calibrated recharge scenario)	Yes	No

Table 1. Groundwater Flow Models (Continued)

File Name	Model Name	Description	Input Files Included	Output Files Included
local_historical_and_projected_transient_low_q_high_recharge.zip	AFinalHighRLQ.gwv	Transient local-scale model, 1964-2003 (historical conditions) and 2004-2049 (low pumping, high recharge scenario)	Yes	No
regional_predevelopment_steady-state.zip	061102.gwv	Steady-state regional-scale model, predevelopment (nonpumping) conditions	Yes	Yes
regional_historical_transient.zip	061102tp.gwv	Transient regional-scale model, 1864-2002 (historical conditions)	Yes	No
regional_projected_2002_steady-state.zip	061102sp.gwv	Steady-state regional-scale model, 2002 pumping conditions (i.e., simulates the steady state that would ultimately develop under 2002 pumping conditions)	Yes	Yes
regional_projected_transient_high_q_cal_recharge.zip	070227tpn.gwv	Transient regional-scale model, 2004-2049 (high pumping, calibrated recharge scenario)	Yes	No

Table 1. Groundwater Flow Models (Concluded)

File Name	Model Name	Description	Input Files Included	Output Files Included
regional_projected_transient_high_q_low_recharge.zip	070227tpnd.gwv	Transient regional-scale model, 2004-2049 (high pumping, low recharge scenario)	Yes	No
regional_projected_transient_low_q_cal_recharge.zip	070227tpy.gwv	Transient regional-scale model, 2004-2049 (low pumping, calibrated recharge scenario)	Yes	No
regional_projected_transient_low_q_high_recharge.zip	070227tpyw.gwv	Transient regional-scale model, 2004-2049 (low pumping, high recharge scenario)	Yes	No

References

Environmental Simulations Inc. 1996-2007. Groundwater Vistas Version 5.

Harbaugh, A.W., E.R. Banta, M.C. Hill and C.K. McDonald. 2000. *MODFLOW-2000, The U.S. Geological Survey Modular Ground-Water Model—User Guide to Modularization Concepts and the Ground-Water Flow Processes*. United States Geological Survey Open-File Report 00-92.

Meyer, S.C., G.S. Roadcap, Y.F. Lin and D.D. Walker. 2009. *Kane County Water Resources Investigations: Simulation of Groundwater Flow in Kane County and Northeastern Illinois*. Illinois State Water Survey Contract Report 2009-07, Champaign, IL.