Table S1. Modules and Related Parameters Removed for Model Transformation from a PRMS Model Run to a GSFLOW Model Run, as Defined in the Parameter File (cited from Table 1, GSFLOW input instruction (accessed by 2018); Table 1-3, PRMS manual (Markstrom et al. 2015))

Module Name	Module Description	Related Parameter	Parameter Description
gwflow	Sums inflow to and outflow from PRMS groundwater reservoirs. Outflow can be routed to downslope groundwater reservoirs and stream segments.	hru_gwres	Identifier of groundwater reservoir associated with an HRU.
		gwflow_coef	Linear coefficient in the equation to compute groundwater discharge for each GWR.
		gwsink_coef	Linear coefficient in the equation to compute outflow to the groundwater sink for each GWR.
		gwstor_init	Storage in each GWR at the beginning of a simulation.
		gwstor_min	Minimum storage in each GWR to ensure that storage is greater than the specified value in order to account for inflow from deep aquifers or injection wells with the water source outside the basin.
		ssr_gwres	Index of the GWR that receives flow from each associated subsurface or gravity reservoir.
		gw_pct_up	Fraction of GWR area used to compute flow contributed to a downslope GWR or stream segment for the cascade area.
		gw_strmseg_down_id	Index number of the stream segment that the cascade area contributes flow.
		gw_up_id	Index of GWR containing the cascade area.
		gw_down_id	Index number of the downslope GWR to which the upslope GWR contributes flow.
strmflow	Computes daily streamflow as the sum of surface runoff, shallow-subsurface flow (interflow), detention reservoir flow, and groundwater flow	-	No related parameters removed since they are used in other modules as well.

Table S2. Modules and Related Parameters Required for Model Transformation from a PRMS Model Run to GSFLOW Model Run, as Defined in Parameter File (cited from Table 1, Table A1-23, GSFLOW input instruction (accessed by 2018))

Module Name	Module Description	Related Parameter	Parameter Description
gsflow_mf2prms	Distributes computed groundwater discharge from MODFLOW cells to HRUs for input to the PRMS soil-zone module at the end of each time step.	gvr_cell_id	Index of the grid cell associated with each gravity reservoir.
gsflow_prms2mf	At the end of each time step, distributes: The gravity drainage and unsatisfied potential evaporation from HRUs to MODFLOW cells, computed from the PRMS soil-zone module for input to the UZF Package, and The Hortonian and Dunnian surface runoff and interflow from HRUs to stream segments and lakes and precipitation and evaporation to lakes, computed by the PRMS surface-runoff and soil-zone module for input to the SFR and LAK Packages.	gvr_cell_pct	Proportion of the grid-cell area associated with each gravity reservoir.
		gvr_hru_id	Index of the HRU associated with each gravity reservoir.
		gvr_hru_pct	Proportion of the HRU area associated with each gravity reservoir.
		id_obsrunoff	Index of measured streamflow station corresponding to the basin outlet.
		mnsziter	Minimum number of iterations for which soil-zone states are computed.
		mxsziter	Maximum number of iterations for which soil-zone states are computed.
		Szconverge	Significant difference for checking soil-zone states.