personnel. The major tasks and their associated costs required to conduct the study are presented in sequential order in table 2. The funding required to conduct the study along with quarterly and annual breakdowns for the duration of the study are presented in table 3. A timeline of the estimated time (in months) required to complete each of the various tasks (1 – 12 as defined and explained in table 2) is presented in table 4.

Table 2. Study tasks and their associated cost.
(Note: HY12 refers to Hydrologist GS-12, etc.)

Task #	Task description	USGS personnel	Estimated hours	Estimated net cost
1	**Obtain and preprocess geospatial data for Upper Scioto River Basin**			
	1.1 Review available geospatial data for the Upper Scioto River Basin and assess for modeling suitability	HY12/HY11	197	$7,460
	1.2 Obtain all necessary geospatial data layers, process into seamless coverages, and conduct hydrologic conditioning on complete dataset	HY12/HY11/HY12	453	$18,121
		Subtotal	650	$25,581
2	**Obtain, process, and analyze downscaled predicted climate data**			
	2.1 Coordinate and obtain downscaled (or if available, most recent appropriate grid-size regional climate model) climate data (precipitation and temperature)	HY12/HY11/ HY12/HY13	182	$8,467
	2.2 Review for suitability and process climate data for input into hydrologic model	HY13/HY12	137	$6,749
	2.3 Assess climate data for temporal trends, and evaluate minimum, mean, and maximum for selected time periods and seasons	HY12/HY11/ HY13	331	$14,267
		Subtotal	650	$29,483
3	**Review and preparation of USGS streamgage data**			
	3.1 Review USGS streamgage records and assess for potential use in model	HY12/HY11/ HY13	302	$12,869
	3.2 Prepare and process streamgage data for input into hydrologic model	HY12/HY11	128	$5,180
		Subtotal	430	$18,048
4	**Develop and analyze model subbasin delineation**			
	4.1 Review characteristics of entire basin to develop reasonable subdivision strategy	HY12/HY11/ HY13	210	$8,560

	4.2 Evaluate future land use build-out development strategies and modify basin subdivisions accordingly	HY12/HY11/ HY13	298	$12,399
	4.3 Create model basin subdivisions	HY12/HY11/ HY12	220	$8,783
	4.4 Parameterize subbasins with current land-cover and soil hydrologic group characteristics	HY12/HY11	298	$11,856
	4.5 Review and finalize model framework	HY12/HY11/ HY13	255	$10,724
		Subtotal	1,280	$52,323
5	**Collect reservoir operation data, assign initial routing parameters, and collect historical meteorological data**			
	5.1 Obtain all reservoir operational data and parameters; assess and prepare data for modeling of various scenarios	HY12/HY11/ HY12	286	$12,746
	5.2 Collect or estimate historical evapotranspiration, air temperature, wind speed, dewpoint, and solar radiation data as needed	HY12/HY11/ HY12	286	$12,746
	5.3 Develop routing tables to assess existing storage and detention volumes for subbasins	HY12/HY11/ HY12	354	$15,673
	5.4 Conduct initial hydrologic model simulations and assess preliminary routing results for accuracy	HY12/HY11/ HY12	354	$15,673
		Subtotal	1,280	$56,838
6	**Hydrologic model calibration**			
	6.1 Conduct preliminary model verifications using observed flow values from USGS streamgage data	HY12/HY11/ HY12	400	$16,366
	6.2 Assess reported reservoir operational rules against measured historical streamflow data.	HY12/HY11/ HY12	394	$16,107
	6.3 Assess model results and make adjustments to calibrate model response. Conduct iterative process until model results are reasonable	HY12/HY11/ HY12	485	$19,548
		Subtotal	1,280	$52,021
7	**Sensitivity analysis and scenario modeling**			
	7.1 Conduct sensitivity analysis on model parameters to assess basin response	HY12/HY11	162	$6,320
	7.2 Assess and refine modeling scenarios as needed	HY12/HY11	168	$6,528
	7.3 Conduct climate-change scenarios	HY12/HY11	168	$6,528