EXHIBIT 5-A - PRMS Detailed Budget

Task/Subtask	HH Labor Total	Right on Q	Travel Costs	Other Direct Costs	Total Cost
Task A. Gather all GIS and Climate data and create PRMS Geodatabase					
A.1 Compile and QAQC climate data from all available climate stations in the Carmel River Basin.	$ 400	$ 3,200	$ -	$ -	$ 3,600
A.2 Analyze precipitation and temperature lapse rates, compile altitudes for precipitation station, and analyze relation between slope, aspect, and temperature. Use max and min temperature data and/or PRISM temperature data to calculate temperature lapse rates and correction factors.	$ -	$ 3,200	$ -	$ -	$ 3,200
A.3 Generate precipitation correction factors (to consider slope, aspect, and altitude) using PRISM data.	$ 480	$ -	$ -	$ -	$ 480
A.4 Compile soils and geology maps for model domain, incorporate maps into FileGeoDatabase	$ 640	$ 1,600	$ -	$ -	$ 2,240
A.5. Compile streamflow gages, daily data, and period of records. Add streamflow gages to FileGeodatabase	$ -	$ 3,200	$ -	$ -	$ 3,200
Task A Total	$ 1,520	$ 11,200	$ -	$ -	**$ 12,720**
Task B. Devoloping PRMS & MODFLOW Parameter Maps					
B.1. Developing Model Grid and Resample DEM to GRID scale	$ -	$ -	$ -	$ -	$ -
B.2 Overlay NHD streams network onto resampled DEM	$ -	$ 160			$ 160
B.3 Condition and fill DEM around streams to accommodate required stream resolution	$ 640	$ 640	$ -	$ -	$ 1,280
B.4 Fill DEM using USGS Cascade Routing Tool (CRT), QAQC resuls of filled DEM	$ 260	$ -	$ -	$ -	$ 260
B.5 Generate stream network using flow direction/flow accumulation	$ 160	$ -	$ -	$ -	$ 160
B.6 Further adjust DEM to assure continuous slopes along streams	$ 160	$ -	$ -	$ -	$ 160
B.7 Create subwatersheds at each guage	$ 160	$ 640	$ -	$ -	$ 800
B.8 Map subwatershed IDs to model grid cells and QAQC	$ 80	$ 160	$ -	$ -	$ 240
B.9 Generation of the Streamflow Routing Package Stream Segment and Reach maps and QAQC	$ 640	$ -	$ -	$ -	$ 640
B.10 Generation of "Clipped" Model Domain and Active Cells Maps, condition DEM along model domain, and generatePRMS HRU IDs	$ -	$ -	$ -	$ -	$ -
B.11 Generation of PRMSGravity Reservoir (GVR) map	$ 80	$ -		$ -	$ 80
B. 12 Add all paramaters to HRU and GVR geodatabases	$ 80	$ -	$ -	$ -	$ 80
Task B Total	$ 2,260	$ 1,600	$ 540	$ -	**$ 4,400**

EXHIBIT 5-A - PRMS Detailed Budget

Task/Subtask	HH Labor Total	Right on Q	Travel Costs	Other Direct Costs	Total Cost
Task C. Developing the PRMS Parameter File					
C.1 Develop Pyton Code to read in HRU and GVR geodatabases and write PRMS parameter file containing the following parameters: • Dimension parameters, Determine initial estimates for slow_coef_lin using hydraulic conductivity and HRU slope using kinematic-wave equivalence, Set basin parameters (watershed area, HRU altitudes, etc), Create HRU cascades using CRT cascade generation tool, Define parameters for temperature distribution module (Temp1sta_prms), Define parameters for precipitation distribution module (Precip_prms), Define parameters for Solar radiation module (ddsolrad_hru_prms), Define parameters for potential-evapotranspiration module (potet_jh_prms), Define parameters for canopy interception mod8ule (intcp_prms), Define parameters for snow computation module (snowcomp_prms), Compile parameters for surface runoff and infiltration module (srunoff_smidx_casc), Compile parameters for soil zone module (soilzone_gsflow), Determine initial estimates for slow_coef_lin using hydraulic conductivity and HRU slope using kinematic-wave equivalence., Define ssr2gw_rate using geology map and recharge potential zonation, Define sat_threshold, soil_moist_max, soil_rechr_max, and soil_type using soil maps, Define other parameters using default values and soil maps	$ 3,920	$ 800	$ -	$ -	$ 4,720
Task C Total	$ 3,920	$ 800	$ -	$ -	**$ 4,720**
Task D. Create PRMS Control File					
D.1 Define modules and external input file names, define start and end time, output options, and subbasin perameters	$ 840	$ -	$ -	$ -	$ 840
Task D Total	$ 840	$ -	$ -	$ -	**$ 840**
Task E. Make Initial PRMS Runs, Tests, Diagnostics, and Errors					
E.1 Evaluate initial PRMS output and diagnose	$ 1,600	$ 320	$ -	$ -	$ 1,920
E.2 Debug parameter file to make sucessful PRMS test runs	$ 1,600	$ -	$ -	$ -	$ 1,600
E.3 Analyze post processing of PRMS Test Runs	$ 1,600	$ 320	$ -	$ -	$ 1,920
Task E Total	$ 4,800	$ 640	$ -	$ -	**$ 5,440**

EXHIBIT 5-A - PRMS Detailed Budget

Task/Subtask	HH Labor Total	Right on Q	Travel Costs	Other Direct Costs	Total Cost
Task F. Calibrate PRMS model for Markleeville and Woodfords subbasins					
F.1 Calibrate PRMS for all subwatersheds utilizing measured streamflow as measured variable in objective function	$ 3,200	$ 320	$ -	$ -	$ 4,320
F.2 Calibrate PRMS for outlet utilizing measured streamflow as measured variable in objective function	$ 3,200	$ 320	$ -	$ -	$ 4,320
F.3 Critically evaluate simulated temperature, precipitation, soil moisture, ET, interflow, runoff, subsurface flow for optimal calirbation for each subbasin	$ 1,440	$ 320	$ -	$ -	$ 2,560
F.4 Critically evaluate simulated temperature, precipitation, soil moisture, ET, interflow, runoff, subsurface flow for optimal calirbation to streamflow for outflow	$ 1,440	$ 320	$ -	$ -	$ 2,560
Task F Total	$ 9,280	$ 1,280	$ 540	$ -	**$ 14,300**
Task G. Make PRMS Runs with Historic Climate					
G.1 Make final PRMS runs for historic climate at each subbasin and formalize results of water budget components	$ 640	$ -	$ -	$ -	$ 640
G.2 Make final PRMS runs for historic climate at outlet and formalize results of water budget components	$ 640	$ -	$ -	$ -	$ 640
Task G Total	$ 1,280	$ -	$ -	$ -	**$ 1,280**
Task H. Report Results					
I.1 Report PRMS Model Development, Calibration to Historical Period, and Historical Results Report	$ 5,280	$ -	$ -	$ -	$ 5,280
	$ -	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -	$ -
Task H Total	$ 5,280		$ 540		**$ 5,820**
	$ 29,180	**$ 15,520**	**$ 1,620**		**$ 46,320**