



September 28, 2021

Mr. Jonathan Lear  
Monterey Peninsula Water Management District  
P.O. Box 85  
Monterey, CA 93942-0085

## **SUBJECT: LETTER PROPOSAL FOR GROUNDWATER MODELING SERVICES**

Dear Mr. Lear:

Montgomery & Associates (M&A) is pleased to present this letter proposal to the Monterey Peninsula Water Management District (MPWMD) for providing on-call groundwater modeling services. MPWMD is leading efforts to manage the Monterey Peninsula's water supply portfolio in an integrated fashion. M&A will support these efforts with groundwater, and integrated groundwater/surface water modeling.

Based on our recent conversation, M&A proposes the following scope and cost. We understand that this is only an initial scope of work. The ultimate scope of work is not set, and may be modified based on MPWMD's evolving needs. The scope and cost presented below reflect our current best estimates of MPWMD's requirements.

## **SCOPE OF WORK**

### **Task 1: Organize and Integrate Carmel Valley GSFLOW Model and Seaside Basin Model**

MPWMD, in coordination with the U.S. Geological Survey (USGS), has developed a GSFLOW model of the Carmel River Valley. This model currently simulates Carmel River and groundwater conditions in the Carmel River Valley through 2015. To ensure that the GSFLOW model is operable and accurate, M&A will:

1. **Extract and Review Groundwater Model Files** – M&A will extract and review the groundwater model input files, the supporting data files, and the related documentation from the information obtained from MPWMD and USGS. M&A will run the groundwater model and confirm it properly executes and produces the results that match results reported by the USGS.

M&A will review all programs, databases, and spreadsheets used to develop model input files or evaluate model output files. M&A will confirm that all tools and data are available to develop new model input files, and that the methodology for developing input files is sound. We anticipate that questions will arise during our review. We will compile a list of questions and forward unresolved questions to MPWMD and USGS staff.

*Deliverable: letter memorandum confirming M&A's ability to accurately run and analyze the GSFLOW model. The memorandum will highlight any difficulties with obtaining data, developing input files, or analyzing model output. The memorandum will additionally highlight any model calibration concerns or issues identified by M&A. This activity does not include efforts to modify the model or improve model calibration.*

2. **Update GSFLOW model through 2020 conditions.** M&A will use the tools provided by USGS and MPWMD to update the GSFLOW model through Water Year 2020. If complete data sets for items such as rainfall, groundwater pumping, streamflow, or other items are not available through water year 2020, the model will be updated through the most recent, complete data sets. Model calibration for the updated years will be compared to calibration of the original model to assess if the model accurately simulates the updated years.

*Deliverable: Technical memorandum detailing the model update. The technical memorandum will include all data used in the update, as well as results of the calibration check.*

3. **Develop methodology for integrating GSFLOW model with Seaside Basin groundwater model.** M&A will develop a conceptual methodology for integrating the Carmel River Valley GSFLOW model with Seaside Basin groundwater model. The methodology will describe how results from the GSFLOW model can be incorporated into the Seaside Basin Groundwater model input files. Currently, M&A assumes the primary data transferred from the GSFLOW model to the Seaside Basin model will be winter ASR deliveries and summer Cal-Am pumping amounts. The methodology will be described, but not implemented under this scope.

*Deliverable: Letter memorandum outlining the conceptual methodology for transferring output from the GSFLOW model to the Seaside Basin model. This will include screen shots showing example data files used for the data transfer.*

## **Task 2: Run Simulations of the Seaside Basin with the Existing Seaside Basin Model**

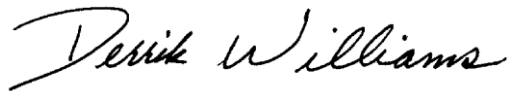
MPWMD has expressed interest in having M&A run simulations using the Seaside Basin groundwater model and the GSFLOW model. These simulations may include, as examples, options for operating Los Padres Reservoir, options for removing Los Padres Reservoir, MPWMD may additionally request simulations of the Carmel River Basin with the Cease-and-Desist Order for SWRCB order 95-10 implemented.

Because the simulations are still uncertain, no description of the simulations is provided here. A budget of \$12,100 is put aside for some number of simulations.

### **BUDGET**

The proposed budget is included on Table 1. The not to exceed budget is \$50,000.

Sincerely,  
MONTGOMERY & ASSOCIATES



Derrik Williams  
Principal Hydrogeologist



Table 1: Proposed Budget

MPWMD: Carmel River Basin Modeling	Montgomery & Associates Estimate of Hours, Fees and Expenses									
	Scientist VIII	Scientist VII	Scientist V	Scientist II	GIS II	Editor	Total Hours	Total Prof. Fees	Expenses	Total Estimated Fees and Expenses
	DW	CT	PB	TP or TC						
2015 Professional Billing Rates	\$265	\$240	\$198	\$133	\$138	\$75				
<b>Task 1. Organize and Integrate Carmel Valley GSFLOW Model and Seaside Basin Model</b>										
1 - Extract and Review Groundwater Model Files		4	40	16	8	4	72	\$12,400		\$12,400
conditions	2	8	60	20	8	4	102	\$18,400		\$18,400
3 - Develop model integration methodology		8	24			4	36	\$7,000	\$100	\$7,100
Subtotal	2	12	100	36	16	8	210	\$37,800	\$100	\$37,900
<b>Task 2. Run Simulations of the Seaside Basin with the Existing Seaside Basin Model</b>										
1 -Run Simulations of the Seaside Basin with the Existing Seaside Basin Model	1	8	44	8			61	\$12,000	\$100	\$12,100
Subtotal	1	8	44	8	0	0	61	\$12,000	\$100	\$12,100
<b>Total</b>	\$795	\$4,800	\$28,512	\$5,852	\$2,208	\$600		\$49,800	\$200	\$50,000