

May 21, 2012

John Munderloh, Water Resources Manager  
Kimberly J. Moon, P.E., Capital Projects Coordinator  
TOWN OF PRESCOTT VALLEY  
7501 E. Civic Circle  
Prescott Valley, AZ 86314

**SUBJECT: SCOPE OF WORK AND COST ESTIMATE FOR HYDROGEOLOGIC SERVICES FOR INSTALLATION OF MONITOR WELLS AND VADOSE ZONE PIEZOMETERS AT THE NORTH PLAINS RECHARGE FACILITY**

Dear Mr. Munderloh and Ms. Moon:

In accordance with your request, Montgomery & Associates (M&A) has prepared the present scope of work and cost estimate for conduct of professional hydrogeologic services for installation of monitor wells and vadose zone piezometers at the Town of Prescott Valley's North Plains recharge facility. Two monitor wells and three vadose zone piezometers will be installed at the recharge facility in accordance with requirements of the amended Aquifer Protection Permit through the Arizona Department of Environmental Quality (ADEQ) and the new Underground Storage Facility permit through the Arizona Department of Water Resources (ADWR). The wells and piezometers are planned to be installed during the later stage of recharge facility construction.

**SCOPE OF WORK**

The present scope of work for M&A professional services has been divided into the following four tasks:

- TASK 1:** Technical Specifications for Drilling
- TASK 2:** Monitor Well and Piezometer Installation
- TASK 3:** Well Completion Reports and Data Submittal
- TASK 4:** Additional On-Call Services

### **TASK 1: TECHNICAL SPECIFICATIONS FOR DRILLING**

M&A will prepare technical specifications for drilling, construction, and equipping of monitor wells; and for drilling and construction of vadose zone piezometers. The technical specifications will be used for contractor bidding and will provide the detailed procedures for drilling and well construction operations. The technical specifications will be based on the approved well and piezometer design as provided to ADEQ and ADWR in the April 14, 2011 hydrogeologic report and subsequent submittals to the agencies during the permit application review period. It is assumed that the Town will contract directly with the driller, but M&A will provide technical support to the Town, and coordinate with the drilling contractors during the contractor selection process.

### **TASK 2: MONITOR WELL AND PIEZOMETER INSTALLATION**

M&A will oversee drilling and installation of monitor wells MW-NP-2 and MW-NP-3 and dual-completion piezometers PZ-NP-1, PZ-NP-2, AND PZ-NP3. The design and locations for these wells and piezometers have already been established (as proposed to and approved by ADEQ and ADWR in the April 14, 2011 hydrogeologic report and subsequent submittals to the agencies during the permit application review period).

M&A will coordinate with the drilling contractor prior to field operations to ensure proper drilling and well construction plans and materials, and will prepare the Notice Of Intention to Drill Monitor Well and Piezometers through ADWR. M&A will monitor contractor activities and obtain data during drilling, construction, and equipping operations. Field activities will include:

- Monitor drilling and evaluate lithologic conditions encountered, including collection of drill cutting samples
- Determine final monitor well and piezometer design based on lithologic conditions and depth to groundwater
- Monitor construction of the monitor wells and dual-completion piezometers
- Monitor installation of the dedicated pumps in the monitor wells
- Prepare lithologic descriptions of drill cutting samples

For the purpose of estimating costs, the following assumptions have been made:

- The drilling contractor will be contracted by the Town
- Utility clearance at the North Plains site will have been completed and would not be conducted M&A
- Pumping tests will not be conducted at the two new monitor wells
- The Town (CH2M Hill/OMI) will obtain groundwater samples following monitor well completion

- Surveyed elevations and locations for the monitor wells and piezometers, and surveyed elevations for the Agua Fria River and Coyote Wash channel bottoms adjacent to the piezometers, will be obtained by the Town or general construction contractor
- The Town will install transducers/dataloggers in the monitor wells

If any of the assumptions listed above are incorrect and/or the Town requests that M&A conduct any of these tasks, M&A will modify the present scope of work and cost estimate to include the relevant tasks.

### **TASK 3: WELL COMPLETION REPORTS AND DATA SUBMITTAL**

M&A will coordinate with the drilling contractor to prepare well completion reports to ADWR for the two monitor wells and three vadose zone piezometers. Specifically, M&A will prepare and provide final schematic diagrams of construction and lithologic descriptions for the wells and piezometers, together with location coordinates and other required information.

In addition, M&A will prepare a data submittal to ADWR and ADEQ that includes:

- Tabulated well construction details for the monitor wells and piezometers
- Final Alert Levels and Operational Prohibition Limits (or Action Levels) for the piezometers based on the post-installation survey results
- Well construction schematics and lithologic descriptions for the monitor wells and piezometers
- Updated location map for the monitor wells and piezometers and other relevant information that might be requested by ADWR and ADEQ

It is important to note that ADWR and ADEQ will require recharge facility construction information to include with or amend the USF and APP permits. This information will include “as-built” construction plans/documents for the recharge facility and associated tabulated data for selected components (such as final recharge basin areas). For the purpose of estimating costs, M&A has assumed that this information will be provided to the Town by the general construction contractor or project engineer for submittal to ADWR and ADEQ.

### **TASK 4: ADDITIONAL ON-CALL SERVICES**

Additional technical services that are not presently anticipated and are not specifically included in the scope of work for Tasks 1, 2, and 3 may be requested by the Town. A small budget has been included in the Estimate Costs (below) for additional on-call services to address minor additional requests or unanticipated work. However, if substantial

additional work is required or requested, M&A would prepare a scope of work and estimated cost for the requested services and would proceed only after authorization from the Town.

### ESTIMATED COSTS

Cost to complete the present scope of work has been estimated on the basis of time and reimbursable expenses in accordance with M&A's 2012 fee schedule. Estimated costs for M&A personnel and reimbursable expenses are summarized below:

TASK	PROFESSIONAL FEES	EXPENSES	TOTAL ESTIMATED COST
1. Technical Specifications for Drilling	\$ 3,900	\$ 100	\$ 4,000
2. Monitor Well and Piezometer Installation	\$ 31,300	\$ 2,700	\$ 34,000
3. Well Completion Reports and Data Submittal	\$ 4,600	\$ 100	\$ 4,700
4. Additional On-Call Services	\$ 3,000	\$ 0	\$ 3,000
<b>TOTAL</b>	<b>\$ 42,800</b>	<b>\$ 2,900</b>	<b>\$ 45,700</b>

Work will be conducted on a time and materials basis and will be invoiced monthly. If the actual scope of work varies from the described scope of work, or if substantial on-call services are requested, actual costs will vary from these estimated costs. However, the total estimated cost of **\$45,700** will not be exceeded without prior authorization from the Town.

If you have questions or require further discussion, please contact us.

Sincerely,

MONTGOMERY & ASSOCIATES



Jeffrey J. Meyer  
Principal

SENT VIA EMAIL