environmental
properties management, LLC

May 31, 2017

Mr. Ken Kalman
Project Manager
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

Paul Davis
Project Manager
Oklahoma Department of Environmental Quality
707 North Robinson
Oklahoma City, OK 73101

Re: Docket No. 70-925; License No. SNM-928
Pilot Test Scope of Work, Cost, and Schedule Information

Dear Mr. Kalman/Davis:

On May 23, 2017, Environmental Properties Management LLC (EPM) submitted a request to revise the 2017 budget to construct and test three water injection trenches and one groundwater extraction trench as a pilot test for planned groundwater remediation. The budget revision request resulted from receipt of contractor bids for construction of the pilot test trenches that exceeded 2016 cost estimates used for 2017 budgetary estimates.

Due to the schedule delay caused by the need to obtain regulatory approval to modify the planned scope of work to complete pilot testing in 2017, the 90% design and requests for proposal for construction and fabrication cannot be completed prior to the end of 2017. This results in available budget funding which can be used to supplement the budget tasks associated with the pilot test trench construction and allow it to be conducted without a budget supplement.

In response to EPM's request for approval to use approved funding for the pilot test, NRC requested that EPM provide details on the scope of work for the trench pilot tests, and the cost and time breakdown for specific activities. This letter:

1. Describes the scope of work that was presented in the development of the 2016 cost estimate.
2. Defines additions or adjustments to the scope of work as the 60% design was brought to 90% as requests for bids were prepared.
3. Identifies changes to the scope of work that were unanticipated at the time the 2016 cost estimate was developed.
4. Compares the 2016 costs for elements of the scope of work with 2017 request for bid (RFB) costs based on refined design and additional requirements.
5. Provides schedule information for the performance of the 2017 pilot test as currently planned.

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This information is presented in four primary categories of work:

1. Preparatory work,
2. Trench construction,
3. Support for water injection and groundwater extraction testing, and
4. Miscellaneous work-related costs.

2016 costs presented in this letter for trench construction were an outside contractor's cost estimate to construct the pilot test trenches based on the 60% design; this 2016 cost estimate was used as input to the proposed budget for 2017. 2017 costs presented in this letter are from one of the three contractors who responded to a March 21, 2017 request for bid (RFB) for the pilot test construction. Attachment 1 is a table comparing the cost of discrete elements of the scope of work based on the 2016 budgetary estimate and the 2017 contractor bid.

**Category 1 – Preparatory Work**

The 2016 budgetary cost estimate provided for the mobilization and demobilization of a limited amount of equipment, and several hours for site orientation and training. The contractor assumed that each trench could be constructed without disturbing an area exceeding one acre, and therefore clearing and grubbing would not be necessary, and stormwater management controls would not need to be implemented.

***Scope***

The following revisions to the scope of work resulted from further definition of the project requirements and preparation of the 90% design and specifications:

1. Discussions with both material suppliers and construction contractors indicated that the 40-mil HDPE liner specified in 2016 could easily be damaged by the placement of gravel in a narrow trench that is over 20 feet deep. A significantly heavier liner material was specified for GWI-UP2-01, requiring the use of additional and different equipment.
2. It was determined that the overall area of disturbance would exceed the thresholds and would require the implementation of stormwater controls in compliance with a stormwater permit. The 2017 RFB included requirements for both clearing and grubbing and stormwater management that had not been included in the 2016 cost estimate.
3. Frac tanks and other large equipment will need to cross the freshwater pond dam to access Burial Area #1, and frac tanks cannot cross the dam of the pond due to the degree of slopes on either side of the emergency spillway. Therefore, some temporary road improvement will be required to transport frac tanks (and possibly some other equipment) across the dam.

***Cost***
The cost for the preparatory work increased from $9,100 to $226,659.

***Schedule***
The schedule submitted with the 2017 bid estimates eight weeks are required from the day the contract is executed to the time that all preparatory work is complete and trench construction can begin.

**Category 2 – Trench Construction**
The 2016 budgetary cost estimate was based on a simple construction process for four injection trenches and one extraction trench.

***Scope***
For all four injection trenches, it was assumed that 5-6 feet of soil would be removed and stockpiled to the side of the trench. A 2-foot wide trench would be excavated to depths up to 30 feet below ground surface (bgs). A sump would be installed in each trench, and approximately 15 feet of gravel would be placed in the trench. It would then be backfilled with the soil and rock that had been excavated. Excess rock would be transported and placed into a dry detention basin located between UP1 and UP2.

The extraction trench in BA1 was assumed to be excavated to its total depth, using a slurry to prevent collapse of the sidewalls. After placing the extraction piping and sumps, approximately 15 feet of gravel would be placed in the trench. It would then be backfilled with the soil that had been excavated. Excess material would be transported and placed into a dry detention basin located between UP1 and UP2.

The following revisions to the scope of work resulted from the preparation of the 90% design and specifications:

1. Silica gravel (or other non-reactive gravel) was specified to minimize the potential for future fouling.
2. It was determined that regulations require that all material brought to the surface, and all equipment and materials, must be staged outside of the 100-year floodplain. Both trenches in BA1 are within the 100-year floodplain.
3. A total of 11 monitor wells are to be installed in the trenches so that the distribution of water (and head) throughout the trench can be evaluated.

4. Several monitor wells located in or adjacent to extraction trench GETR-BA1-01 have to be abandoned, because they are located within the construction area and will be destroyed if left in place.
5. A total of 15 monitor wells will be installed outside of the trenches, mostly in the UP1 and UP2 areas. In UP1, this will provide distributed lithologic information in an area where there is limited data. In all areas, these monitor wells will provide needed information on the degree influence of injection in the vicinity of the injection trenches.
6. The cost of addressing items 1-5 was considered to be sufficient to render it impossible to perform the pilot test within the existing budget, so Trench GWI-UP2-04 was removed from the scope of work.
7. As stated above, liner material to be placed on the south wall of Trench GWI-UP2-01 was changed. The new specification is for 80 mil HDPE with geofabric on both sides of the liner material (to protect the liner from tears). This impacted the cost of material, the complexity of installation, the equipment needed to install the liner, and the schedule of construction.

In addition, in depth evaluation of subsurface data (as described in the May 23 submittal) showed that in the UP1 and UP2 areas, soil within a specific depth interval contains elevated concentrations of uranium. The volumetric averaging criteria utilized to demonstrate that these areas are releasable for unrestricted use is based on the assumption that the area is subject to excavation in the future. However, in accordance with ALARA principles, the decision was made to segregate the soil that may contain elevated concentrations of uranium from other excavated material, and to return it to the same depth as the trenches are backfilled. This process added significantly to the complexity of the work, as well as requiring additional stormwater controls.

***Cost***

Attachment 1 tabulates the costs associated with the construction of each trench, as well as the additional cost of monitor well installation and abandonment, associated with scouring the rock walls of the trench to improve hydraulic connection with the formation. The total cost for construction of the trenches increased from approximately $424,320 to $935,319.

***Schedule***

The schedule upon which the 2016 cost estimate was based assumed that two trenches could be constructed simultaneously. A total of five weeks was estimated for construction of all five trenches.

The schedule submitted with the 2017 bid does include some overlap between trenches, but indicates that approximately eight weeks will be required to construct the trenches. The contractor sought guidance from the Oklahoma Department of Transportation (ODOT) to estimate the number of days that weather would impact earthwork at this time of year. Based on the information received from ODOT, the contractor indicates that weather delays would be expected to add one week to this schedule. The contractor did not incorporate those delays into the eight-week schedule. The total duration for trench construction should require nine weeks. Total project duration to this point is 17 weeks from awarding the contract.

**Category 3 – Water Injection and Groundwater Extraction Testing**

The 2016 cost estimate included the cost to stage and move frac tanks on the site to provide a source for water for injection testing, and to store recovered groundwater for the rest of the year.

***Scope***

The following revisions to the scope of work resulted from the preparation of the 2017 RFBs:

1. The contractor will provide a water truck and will provide the potable water needed for injection testing. The cost of the water was not included in the 2017 bid, only the cost for the water truck and operator.
2. The contractor will provide and maintain skids containing the pumps, valves, pressure and flow meters, etc., needed for both injection and extraction testing. The contractor will not perform the tests.

***Cost***

These additions to the scope of work increased the contractor's cost for injection and extraction testing from $40,320 to $128,920.

***Schedule***

Testing will require one to two weeks following the construction of the last trench. During this time, the contractor will perform site restoration, obtain release surveys, and demobilize equipment during. Total project duration to this point is 19 weeks from awarding the contract.

**Category 4 – Miscellaneous Work-Related Costs**

***Scope***

The 2016 budgetary cost estimate included standby time for release surveys, the cost to retain a surveyor to survey the bottom of the trenches, and restoration of the site. Other indirect costs were included in the construction cost estimate.

The 2017 bid included restoration of disturbed areas, rental of a construction trailer, and tax on material purchased. In addition, indirect costs were not incorporated into the construction costs, but were itemized separately.

***Cost***
Primarily due to assigning site supervision to this category, the contractor's cost for miscellaneous work-related costs increased from $56,500 to $179,255.

***Schedule***
These miscellaneous cost items are incurred during the project and do not independently affect the project schedule.

**Development of the 2016 Budget Request**
The 2016 budgetary cost estimate totaled $530,675 for the primary contractor's scope of work, yet the proposed budget included $796,328 for pilot test construction activities. Approximately $106,000 was added to the budgetary cost estimate to provide for work to be performed by others, such as provision of potable water, surveying, and fabrication and maintenance of testing skids. The addition of a 25% contingency yielded a total of $796,328 for pilot test construction.

**Summary**
In 2016, a budgetary cost estimate was obtained for construction of five pilot test trenches, based on 60% design drawings and a scope of work that was based on known and anticipated activities. In addition, estimated costs for several scope items that had not been included in the trench construction were added to the budgetary cost estimate. Addition of items not provided by the primary contractor and a 25% contingency, a budget of $796,328 for pilot test trench construction and testing was proposed and eventually approved.

Several refinements to the scope of work and additional requirements were identified during the development of 90% design drawings and specifications. Those refinements and additional requirements, in conjunction with the decision to address soil containing elevated activity in accordance with ALARA principles, were incorporated into the RFBs that were issued March 10, 2017. All three of the contractor's bids significantly exceeded the budgeted amount, even before applying a 25% construction contingency.

It is believed that approximately 8 weeks will be required from contract award to mobilization, approximately nine weeks for construction (including one week for weather delays), and two weeks to complete injection and extraction testing. Even if NRC and DEQ approve the request to defer 90% design and preparation of RFPs until 2018 by the end of June, this will extend the

pilot testing project into November. If this schedule estimate is accurate, it is unlikely that the 60% design and decommissioning plan can be completed by the end of the year. Consequently, EPM requests that NRC and DEQ approve the May 23 request to proceed as soon as possible.

If you have questions or desire clarification on any of these responses, please contact me at 405-642-5152 or jlux@envpm.com.

Sincerely,

Jeff Lux, P.E.
Project Manager

cc: Robert Evans, US Nuclear Regulatory Commission, Region IV
NRC Document Control Desk (electronic copy only)