

## Form B

### Model Water Well

#### Request for Proposal Number 4710Z1

Use the following model to provide unit pricing on the provided cost sheet.

1. 16-inch diameter cased water well gravel packed from bottom to the surface
2. 100 foot deep with 25 feet of screened opening
3. 30 foot static water level
4. 20 feet of confining clay (aquitar) above the screen openings (55-75 feet below ground surface)
5. 5 feet of drip oil 25-30 feet below ground surface
6. 50 foot of 8-inch pump column and discharge head
7. Located within a pump house
8. Electricity and water available on-site

#### I. STEPS TO RECONSTRUCT A 100 FOOT DEEP WELL ILLUSTRATED ABOVE

##### A. STEP 1

The contractor will drill a test hole or core a test hole as close to the well location as possible to verify and validate the recorded geology of the well site. The contractor will collect drill cutting samples or core samples every 5 feet of depth or every obvious change in the geology whichever is less. The test hole will be e-logged and a Nebraska registered geologist will provide analysis of the geophysical well log, drill cuttings and/or core sample and provide the contractor a written report of the findings. The contractor will then decommission the test hole in accordance with Title 178 NAC 12-012.08H Regulations Governing Water Well Construction, Pump Installation and Water Well Decommissioning Standards.

##### B. STEP 2

Once the exact properties of the aquitar has been delineated, the contractor will remove the pump discharge head and pull the pump column. The well condition will be evaluated and downhole video documented by the Nebraska Department of Health and Human Services. The oil slick will be removed and the well brushed to remove oil residue to establish a fresh surface adjacent to the depth of the aquitar for the inflatable packer to seal against. The contractor will install a pump large enough to remove debris that fell to the bottom of the well as a result of the brushing to establish a baseline specific capacity performance yield.

##### C. STEP 3

A casing cutter will be inserted to a depth adjacent to the lowest terminus of the aquitar and the casing will be cut every 60 degrees. The cutter will be raised 5 feet and the casing will be cut again every 60 degrees. The well will be downhole video inspected by the Nebraska Department of Health and Human Services to establish the location and position of the cuts.

##### D. STEP 4

A 3-bladder inflatable packer will be set adjacent to the lowest intervals casing cuts and inflate the top and bottom bladders of the packer isolating the area of the casing cuts. Grout material will be placed through the lower cuts in the casing until the grout is observed exiting the series

of cuts 5 feet higher in the casing. The middle bladder will then be inflated to seal off the cut casing and remain in place until the grout has set.

**E. STEP 5**

The inflatable packers will then be removed and the well will be downhole video inspected by the Nebraska Department of Health and Human Services to verify the grout seal of both cut intervals in the casing. The test pump will be reinstalled and 6-hour timed stepped test pump to determine total yield and specific capacity of the well.

**F. STEP 6**

The well is shock chlorinated and the permanent pump equipment will be reinstalled into the well.

**II. STEPS TO DECOMMISSION A 100 FOOT DEEP WELL ILLUSTRATED ABOVE**

**A. STEP 1**

The contractor will drill a test hole or core a test hole as close to the well location as possible to verify and validate the recorded geology of the well site. The contractor will collect drill cutting samples or core samples every 5 feet of depth or every obvious change in the geology whichever is less. The test hole will be e-logged and a Nebraska registered geologist will provide analysis of the geophysical well log, drill cuttings and/or core sample and provide the contractor a written report of the findings. The contractor will then decommission the test hole in accordance with Title 178 NAC 12-012.08H Regulations Governing Water Well Construction, Pump Installation and Water Well Decommissioning Standards.

**B. STEP 2**

Once the exact properties of the aquitard has been delineated, the contractor will remove the pump discharge head and pull the pump column. The well condition will be evaluated and downhole video documented by the Nebraska Department of Health and Human Services. The oil slick will be removed and the well brushed to remove oil residue to establish a fresh surface adjacent to the depth of the aquitard for the inflatable packer to seal against. The contractor will install a pump large enough to remove debris that fell to the bottom of the well as a result of the brushing.

**C. STEP 3**

A casing cutter will be inserted to a depth adjacent to the lowest terminus of the aquitard and the casing will be cut every 60 degrees. The cutter will be raised 5 feet and the casing will be cut again every 60 degrees. The well will be downhole video inspected by the Nebraska Department of Health and Human Services to establish the location and position of the cuts.

**D. STEP 4**

A 3-bladder inflatable packer will be set adjacent to the lowest intervals casing cuts and inflate the top and bottom bladders of the packer isolating the area of the casing cuts. Grout material will be placed through the lower cuts in the casing until the grout is observed exiting the series of cuts 5 feet higher in the casing. The middle bladder will then be inflated to seal off the cut casing and remain in place until the grout has set.

**E. STEP 5**

The inflatable packers will be removed and the well will be downhole video inspected by the Nebraska Department of Health and Human Services to verify the grout seal of both cut intervals in the casing. The well will then be decommissioned in accordance with Title 178 NAC 12-012.01, 012.07A and 012.08B.

**RFP Number 4710Z1  
Water Well Services  
Opening Date: June 10, 2014  
Cost Sheet**

| <b>WELL SITE ASSESSMENT</b>                               | <b>Unit</b>          | <b>Initial Cost</b> | <b>Renewal 1 Cost</b> | <b>Renewal 2 Cost</b> |
|---|----------------------|---------------------|-----------------------|-----------------------|
| Drill and Decommission a Test Hole/Core                   | Per Foot             |                     |                       |                       |
|   | Minimum Per Depth    |                     |                       |                       |
| E-log with Caliper, Gamma, S, Normal 4 Wave Logging Tools | Per Foot             |                     |                       |                       |
| Decommissioning Materials for 6-Inch Test Holes           | Per Foot             |                     |                       |                       |
| <b>WELL SITE</b>  | <b>Unit</b>          | <b>Initial Cost</b> | <b>Renewal 1 Cost</b> | <b>Renewal 2 Cost</b> |
| Pull Pumping Equipment                                    | Per Foot             |                     |                       |                       |
|   | Minimum Per Depth    |                     |                       |                       |
| Install Pumping Equipment                                 | Per Foot             |                     |                       |                       |
|   | Minimum Per Depth    |                     |                       |                       |
| Remove Petroleum Oil Slick                                | Per Foot             |                     |                       |                       |
| Segregated Water Sampling                                 | Per Interval         |                     |                       |                       |
| Brush the Casing  | Per 15 Foot Interval |                     |                       |                       |
| Cut Casing for Injection                                  | Per Interval         |                     |                       |                       |
| Cut Casing for Vent                                       | Per Interval         |                     |                       |                       |
| Inject 5 Feet of Grout                                    | Per Interval         |                     |                       |                       |
| 6 Hour Timed Stepped Pump Test                            | Per Test             |                     |                       |                       |
| Shot Detonation Decommissioning for 10-24 Inch Wells      | Per Foot             |                     |                       |                       |
| Decommissioning Materials for 10-24 Inch Wells            | Per Foot             |                     |                       |                       |