

COTTONWOOD RANCH RECAPTURE WELL NETWORK BID #1  
CONSTRUCTION SPECIFICATIONS

**COTTONWOOD RANCH RECAPTURE WELL NETWORK BID #1**  
**WELL DRILLING, PUMP INSTALLATION**  
**AND ELECTRICAL SUPPLY**

**SECTION 01 SUMMARY OF WORK**



**PART 1. GENERAL**

**A. Work Under This Contract**

All work under this contract shall be in accordance with the rules and regulations of the Tri-Basin Natural Resources District (TBNRD), Nebraska Department of Health and Human Services (NE DHHS), and the Nebraska Department of Natural Resources (NDNR). Work included under this contract generally includes construction, testing, and equipping of seven (7) wells whose locations are shown in Figure 1. The wells to be drilled are intended to fully penetrate and obtain their water supply from the alluvial sediments underlying the site. Anticipated construction details for the wells are shown in Figure 2. The Nebraska Conservation and Survey Division (CSD) drilled several test holes in this area. Copies of the CSD logs can be made available to the Contractor prior to the start of work. CSD logs report the bottom of the alluvial aquifer at a depth of about 40 feet in this area. The wells will be completed with a “sump” extending approximately 5 to 10 feet into the underlying sediments. The work under this contract includes:

1. Mobilization and demobilization of all equipment, supplies, and personnel for the construction, development, testing, and equipping of 7 wells, on behalf of TBNRD.
2. Installation of temporary surface casing to stabilize the uppermost sediments, if needed.
3. Drilling a nominal 24-inch diameter hole to an estimated depth of 50 feet.
4. Running an electronic log in the drilled hole.
5. Setting 16-inch outside diameter (OD) PVC casing and 0.085 slot screen.
6. Placement of gravel pack adjacent to the screened interval.
7. Sealing of the annular space between the casing and the drilled hole.
8. Development of the well using compressed air and a temporary submersible pump.
9. Short term well testing lasting approximately 4 hours.
10. Furnishing and installation of a permanent submersible turbine pump and motor, column pipe, and start/stop controls, concrete pad, steel plate with access ports, and discharge elbow.

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11. Well disinfection.

12. Installation of surface facilities including earthen and concrete pad and steel plate and discharge elbow.

**Contractor's work hours may be limited during the spring whooping crane migration periods. Contractor should expect to work under the following limitations:**

*For Work occurring in or within 0.25 miles of the Platte River channel between the dates March 6 and April 29, or October 9 and November 15, the Contractor will not begin work until one of the following requirements has been met each day: 1) The Contractor observes the airplane conducting whooping crane surveys during their daily basis fly-over the construction zone without circling back to verify a whooping crane sighting; or 2) it is at least one (1) hour after sunrise and the Contractor has confirmed there are no whooping cranes or large white birds in the construction zone; or 3) the Project Engineer has confirmed the lack of whooping cranes in the construction zone. If the Contractor has any suspicion or question as to whether or not a whooping crane is present, he will not start work until a positive identification can be made by the Project Engineer or the bird(s) leave by their own accord. The Contractor will contact the Project Engineer anytime he thinks there may be a whooping crane in the construction zone. Between these same dates, the Contractor must conclude work two (2) hours before sunset and equipment must be staged appropriately.*

**The Contractor may propose alternate methods and/or materials to accomplish this work. In such a case, Contractor should provide the cost of the alternate methods and/or materials and a short narrative explaining the benefits. The Contractor shall immediately report any discrepancy between these specifications and State and Local rules governing well construction.**

Please fill out, sign and date bid form if you are submitting a bid. If submitting a bid, Contractor must attend a mandatory pre-bid inspection at 10:00 am CT on Thursday, August 19<sup>th</sup>, 2021 (meet at Tri-Basin NRD office in Holdrege and continue to site showing). **Bids must be submitted in person to John Thorburn at the Tri-Basin NRD by 2:30 pm CT Tuesday, September 7<sup>th</sup>, 2021.** It is desired that the work be completed as soon as possible and no later than December 31<sup>st</sup>, 2021. Address and contact information is below.

Tri-Basin NRD

1723 Burlington Street  
Holdrege, NE 68949

Phone: 308-995-6688

**B. Site Access**

Tri-Basin NRD will obtain easements on the properties on which the wells will be drilled and will arrange for legal access to the sites. The Contractor will be responsible for physical access to the drilling locations. Access must be coordinated with TBNRD.

**PART 2. MATERIALS**

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Not Used

PART 3. EXECUTION

Not Used

END OF SECTION

**SECTION 02 MEASUREMENT AND PAYMENT**

PART 1. GENERAL

A. Section Includes

Measurement and payment criteria applicable to the Work performed under the lump sum and unit price payment method.

B. Unit Quantities Specified

1. Quantities and measurements indicated in the bid form are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work shall determine payment.
2. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit/lump sum prices contracted.

C. Payment

1. Payment includes: Full compensation for furnishing all required equipment, labor, materials, tools, plant, transportation, services, incidentals, erection, application or installation of an item of the Work, and all other costs of whatsoever nature for the items of work complete, will be included in the various bid items, including overhead and profit.
2. Final payment for Work governed by lump sum and unit prices will be made on the basis of the actual measurements and quantities multiplied by the unit/lump sum price for Work which is incorporated in or made necessary by the Work.

D. Measurement and Payments of Bid Items Shall Be as Follows:

1. Mobilization/demobilization – Lump Sum. Mobilization will not be measured for payment. This bid item shall include well registration fees, preparatory work and all costs incurred in moving personnel and equipment to and from the sites, project signs, bonds, insurance, Contractor's administrative personnel, administrative costs, temporary facilities, and all incidental costs. Payment to the Contractor for mobilization/demobilization shall be at the lump sum price bid in the schedule and will be paid for as follows: 70% following initial setup of equipment; 30% at completion of the project.

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2. Install temporary surface casing if required. There will be no payment for this item. The cost for this item should be included in the mobilization/demobilization cost.
3. Drill nominal 24-inch Hole – Lineal Feet. This item will be measured in lineal feet of drilled hole, including the running of an electrical log.
4. Run Electronic Log – There will be no separate payment for this item.
5. Furnish/Install 16-inch PVC Casing – Lineal Feet. This item will be measured in lineal feet of installed casing.
6. Furnish/Install 16-inch, PVC Well Screen – Lineal Feet. This item will be measured in lineal feet of installed screen including centralizers.
7. Furnish/Install Surface Seal – Lineal Feet. This item will be measured in lineal feet of installed grout.
8. Furnish/Install Gravel Pack – Lineal Feet. This item will be measured in lineal feet of installed gravel.
9. Well Development – Hour. This item will be measured in hours required to develop the well.
10. Well Testing – Lump Sum. This item will not be measured for payment. This item shall be paid as a lump sum, and will include installation of a temporary pump, discharge piping, and flow control valve, supply of temporary power, actual testing, and removal of the temporary equipment at the conclusion of testing.
11. Furnish/Install Submersible Turbine Pump – Lump Sum. This item will not be measured for payment. This item will be paid as a lump sum and will include furnishing and installation of a submersible turbine pump and motor, column pipe, check valve, wiring, and electrical controls for pump operation.
12. Furnish/Install Surface Facilities – Lump Sum. This item will not be measured for payment. This item shall be paid as a lump sum item for the well and will include the well pad, crushed rock, steel plate and connection elbow.

PART 2. MATERIALS

Not Used

PART 3. EXECUTION

Not Used

END OF SECTION

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**SECTION 03 PERMITS**

**PART 1. GENERAL**

**A. Permits**

The Contractor shall familiarize themselves with the conditions and requirements of all permits that are required by Federal, State, County, and local governing agencies. The Contractor shall comply with the conditions and the requirements of the permits in the performance of this contract.

**B. District Supplied Permits**

The Tri-Basin Natural Resources District (TBNRD or District) will notify contractor as to which permits it has obtained. Contractor will be responsible for all other permits necessary for construction, if applicable.

**PART 2. MATERIALS**

Not Used

**PART 3. EXECUTION**

Not Used

**END OF SECTION**

**SECTION 04 MOBILIZATION AND DEMOBILIZATION**

**PART 1. GENERAL**

Contractor will provide all equipment, materials, and services necessary for the efficient construction, development, and equipping of seven (7) wells. The specific drilling locations will be staked in advance of construction. The construction of the wells will be as shown in the drawings and as described in these specifications.

**PART 2. MATERIALS**

**A. General**

The Contractor will provide a rotary drilling unit, all tools, accessories, power, pump, lighting, water and other equipment, and experienced personnel necessary to conduct efficient drilling operations at the site. Drilling of the wells shall be by the reverse rotary method only.

**PART 3. EXECUTION**

Mobilization and demobilization will include the transportation of personnel, equipment, and operating supplies to and from the sites; securing of a water supply for drilling; establishment of

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portable sanitary facilities; final cleanup; and the filing of all well completion reports, and all other items required for a complete installation at each of the seven (7) locations.

It shall be the Contractor's responsibility to arrange for and obtain a supply of water and power as may be needed for this work. It shall be the Contractor's responsibility for providing, installing, and maintaining all temporary piping required for the safe disposal of all fluids produced during drilling and development of the wells.

**END OF SECTION**

**SECTION 05 DRILLING AND SAMPLING**

**PART 1. GENERAL**

This section covers the work, materials, and equipment necessary for drilling the well and sampling of subsurface materials penetrated by the drill.

**PART 2. MATERIALS**

**A. Drilling Methods and Drilling Fluids**

Drilling shall be by reverse rotary only. Drilling fluids shall be as required by NEDHHS Title 178 Water Well Standards.

**B. Sampling**

Contractor shall collect drill cuttings at 5-foot intervals and at changes in formation. These samples will be available for inspection on site during construction. They may be discarded following completion of the well.

**PART 3. EXECUTION**

Install temporary surface casing as needed. Drill a nominal 24-inch diameter hole to a depth of approximately 50 feet to provide a 5 to 10 foot sump below the base of the aquifer. Contractor may propose an alternate hole size subject to review by the District. Actual depth of this hole will be determined during construction by the District's representative.

**END OF SECTION**

**SECTION 06 CASING AND SCREEN**

**PART 1. GENERAL**

This section covers the work, materials, and equipment necessary for furnishing and installing all casing and screen within the wells. It includes the furnishing and installing of centralizers, couplings,

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and end cap. Contractor shall insure that casings are not dewatered at any time during the wells' construction or development.

**PART 2. MATERIALS**

1. Well casing shall be 16-inch OD, SDR 26 PVC well casing, and meet the requirements of NEDHHS Title 178 Water Well Standards.
2. Well screen shall be 16-inch OD, SDR 26 PVC 0.085 slot well screen, and meet the requirements of NEDHHS Title 178 Water Well Standards. Machine slots shall not be permitted.
3. Casing centralizers shall be provided for centering the 16-inch OD casing and screen in the 24-inch diameter hole.

**PART 3. EXECUTION**

1. Casing and screen shall be held in tension at all times during installation and gravel packing.
2. Centralizers shall be placed at the top and at the base of the screen.

**END OF SECTION**

**SECTION 07 SURFACE SEAL**

**PART 1. GENERAL**

This section covers the work, materials, and equipment necessary for furnishing and installing a surface seal.

**PART 2. MATERIALS**

Cement shall be a neat cement grout slurry and meet the requirements of NEDHHS Title 178 Water Well Standards.

Bentonite shall meet the requirements of NEDHHS Title 178 Water Well Standards.

**PART 3. EXECUTION**

Contractor shall seal the annular space of the well according to the requirements of NEDHHS Title 178 Water Well Standards. After cementing operations have been completed, the grout shall be left undisturbed for a period of not less than 24 hours.

**END OF SECTION**

**SECTION 08 GRAVEL PACK**

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**PART 1. GENERAL**

This section covers the work, materials, and equipment necessary for furnishing and installing gravel pack within the well.

**PART 2. MATERIALS**

Gravel pack shall meet the requirements of NEDHHS Title 178 Water Well Standards. Sizing of the gravel shall be such that at least 90% of the material is retained by the 0.085 slot screen.

**PART 3. EXECUTION**

Gravel pack shall be placed in a manner consistent with NEDHHS Title 178 Water Well Standards. Gravel pack shall be placed from the bottom of the borehole up to the approximate level shown in the drawings.

**END OF SECTION**

**SECTION 09 WELL DEVELOPMENT**

**PART 1. GENERAL**

This section covers the work, materials, and equipment necessary for developing the well using a temporary development pump. The objective of well development is to bring the well to a point of maximum production and to a substantially sand-free condition.

**PART 2. MATERIALS**

Contractor shall develop the wells using a temporary submersible pump installed to a depth of not less than 40 feet. The temporary pump shall be capable of producing not less than 1,200 gallons per minute from the well.

**PART 3. EXECUTION**

Contractor shall conduct development for a period of 4 hours. Contractor shall record the depth of the airline or pump used for development, the static water level prior to the start of development, an estimate of the rate of water produced from the well during the development period, and the clarity of water produced from the well at the conclusion of development. The time required to develop the well may be extended by the District's representative.

**END OF SECTION**

**SECTION 10 SHORT-TERM WELL TESTING**

**PART 1. GENERAL**



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This section covers the work, materials, and equipment necessary for conducting a short-term test of the well to determine its operating characteristics (discharge/drawdown), including setting of a temporary submersible turbine pump, flow control valve, and not less than 100 feet of temporary discharge piping. Contractor should assume he will need to provide temporary power.

**PART 2. MATERIALS**

The submersible turbine pump shall be capable of discharging up to 1,200 gallons per minute (gpm) with a total dynamic head of approximately 60 feet. The flowmeter shall be an in-line propeller meter capable of accurately (within 5%) measuring discharge in the range of 600 to 1,200 gpm. Discharge piping shall be 8-inch or larger in diameter extending a distance of at least 100 feet from the well.

**PART 3. EXECUTION**

Install pump, flow control valve, discharge piping, and flow meter. Provide temporary erosion protection at the point of discharge. Operate well at discharge rates of 600 gpm, 800 gpm, 1,000 gpm, and 1,200 gpm for one hour each, or at other rates as may be specified by the District's representative. Measure and record static water level. Measure and record discharge rate and drawdown at 5-minute intervals for the duration of the test.

**END OF SECTION**

**SECTION 11 SUBMERSIBLE TURBINE PUMP**

**PART 1. GENERAL**

This section covers the work, materials, and equipment necessary for installing a permanent submersible turbine pump including pump, motor, column pipe, wire, and electrical controls.

**PART 2. MATERIALS**

The pump shall be a submersible turbine pump and motor capable of delivering 1,200 gallons per minute with a total dynamic head of approximately 60 feet operating at a speed of 3,600 rpm. The motor shall be 3-phase, 480 volt, constant speed. The Pump to be supplied shall have cast-iron bowls and stainless steel or bronze impellers. The pump and motor shall be subject to review by the District. It is the District's intention that all seven wells be equipped with pumps and motors from the same manufacturers to allow for interchangeability of parts and consistency in maintenance and operations.

These performance characteristics are estimates only. The final performance characteristic for the submersible turbine pump and motor may differ from the characteristic described above, as well performance cannot be predicted with certainty until the wells have been tested. Accordingly, the final performance characteristic of the pump and motor will be determined by the District's representative once the short-term testing of all 7 wells has been completed.

Column pipe shall be 8-inch diameter, PVC. Include pump shroud and torque arrestor if required by the conditions of the installation.

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Connect electrical from control box to meter on a nearby pole. Although the distance could vary (meters have not yet been installed), it is assumed that 100 feet of buried electrical wire will be needed to run from the meter to the control box near each well. It is up to the contractor to supply the correct type of wire and conduit.

**PART 3. EXECUTION**

Assemble and install pump, motor, column pipe, wiring, and electrical controls. A transformer, power drop, and meter will be installed by others at or near a location or locations of the 7 wells and will be in place in advance of the well construction project. Contractor will provide and install a pedestal, electrical panel, and electrical controls and make the connection to the in-place meter. Protect any exposed wiring by permanently enclosing in conduit. Bury line between control box and well.

**END OF SECTION**

**SECTION 12 SURFACE FACILITIES**

**PART 1. GENERAL**

This section covers the work, materials, and equipment necessary for installing the earthen and concrete well pad, as well as the connection elbow. The surface facilities shall conform with the requirements of NEDHHS Title 178 Water Well Standards.

**PART 2. MATERIALS**

Surface facilities will generally include: earthen and concrete pads, crushed rock and discharge elbow and steel plate necessary to connect to above-ground piping (8-inch, low carbon steel) as shown in Figure 3.

Concrete pad shall meet the requirements of Title 178 Water Well Standards.

Steel plate shall be low-carbon steel measuring approximately 2 ft x 2 ft x ½ inches. Drill and tap two 1-1/2 inch diameter holes on opposite sides of the steel plate to provide access to the annular space between the pump column and the well casing, to permit installation of water level measurement instrumentation. These threaded holes shall be fitted with 1-1/2 inch diameter x 2 inch threaded nipple and end cap. Water level measurement instrumentation will be provided by others.

**PART 3. EXECUTION**

Install earthen and concrete pad and elbow as shown in Figure 3. Top of concrete pad must rise no less than 12" above surrounding surface elevation. Wire brush all exposed steel and paint with rust-resistant light blue enamel.

**END OF SECTION**

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Bid Table  
Construction, Testing, and Equipping of Recapture Wells  
and Installation of Discharge Pipelines  
Cottonwood Ranch

Spec. #	Description	Unit	Estimated Quantity for 7 Wells	Contractor's Bid	
				Unit Price (Figures)	Total Price (Figures)
04	Mobilization/Demobilization	LS	1	\$	\$
05	Drilling 24-inch Hole	LF	350	\$	\$
06	Furnish/Install 16-inch PVC Casing	LF	210	\$	\$
06	Furnish/Install 16-inch PVC Screen	LF	140	\$	\$
07	Grout Seal	LF	70	\$	\$
08	Furnish/Install Gravel Pack	LF	280	\$	\$
09	Well Development	HR	28	\$	\$
10	Short-Term Well Testing	LS	7	\$	\$
11	Submersible Turbine Pump/Motor	LS	7	\$	\$
12	Surface Facilities	LS	7	\$	\$

LS = Lump Sum  
LF = Linear Feet  
HR = Hour

Total Construction Quote \$ \_\_\_\_\_

Work Dates \_\_\_\_\_

Submitted By: \_\_\_\_\_  
(Company)

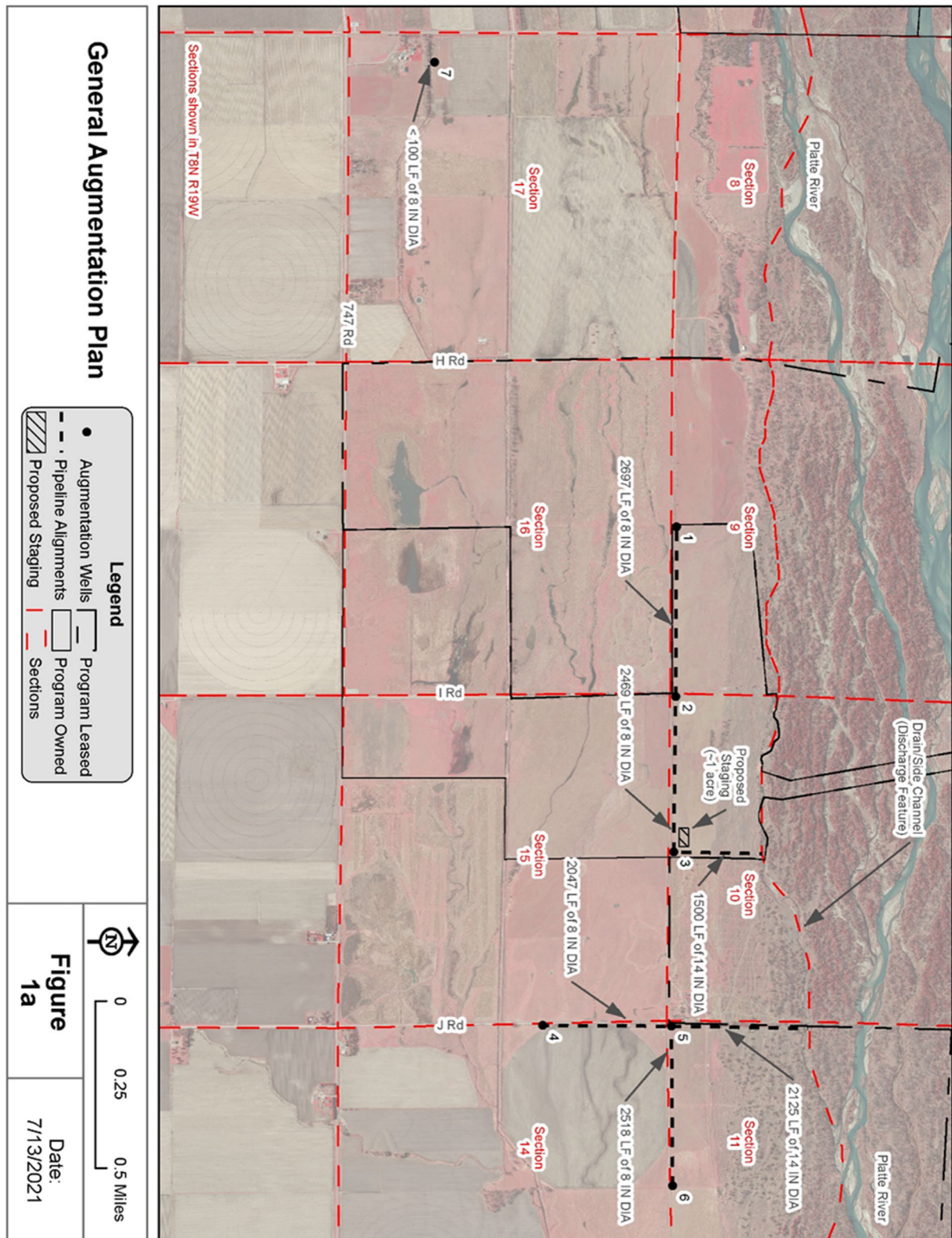
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(Individual)

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(Sign & Date)

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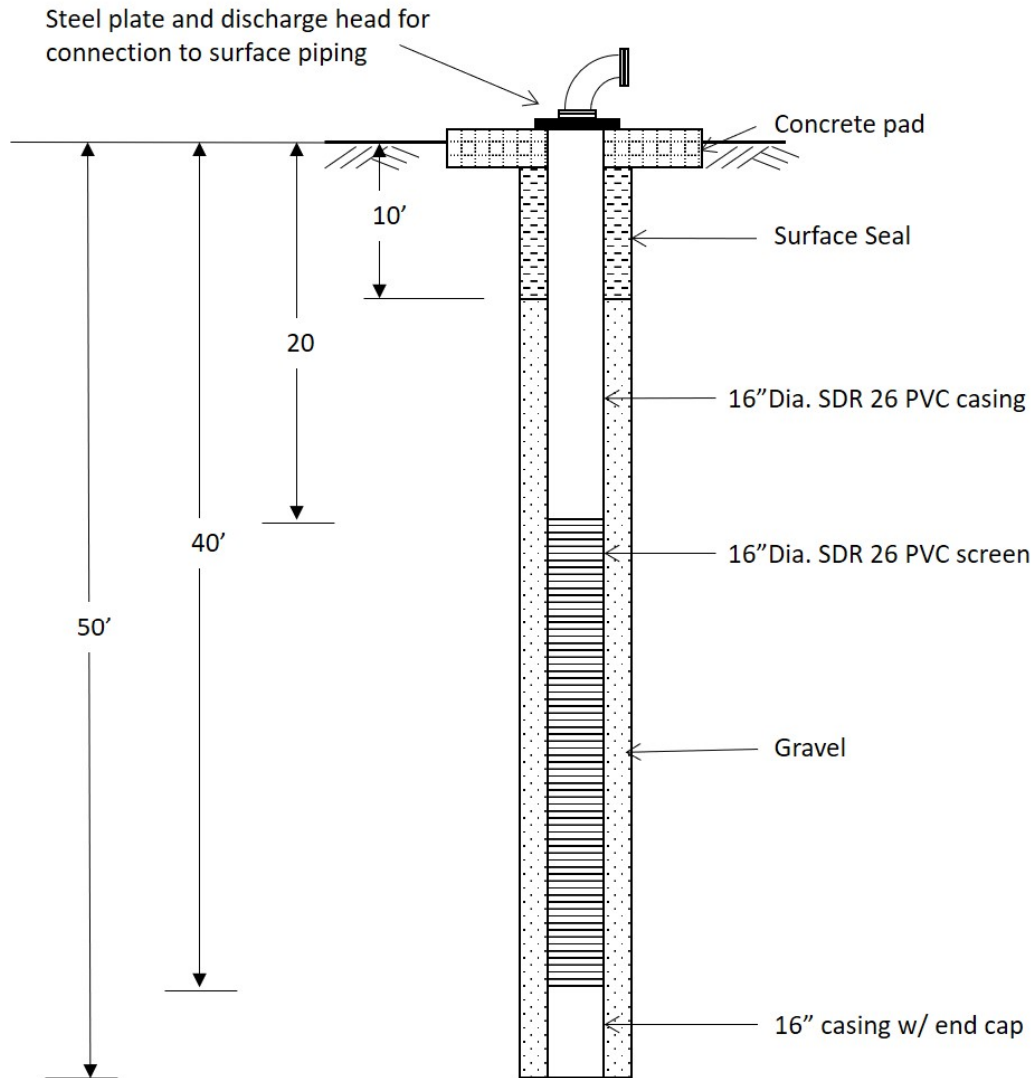
**APPENDIX A: FIGURES AND SCHEMATICS**

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**Figure 1:** General Well Locations. Pipeline lengths are approximate as necessary for bidding.

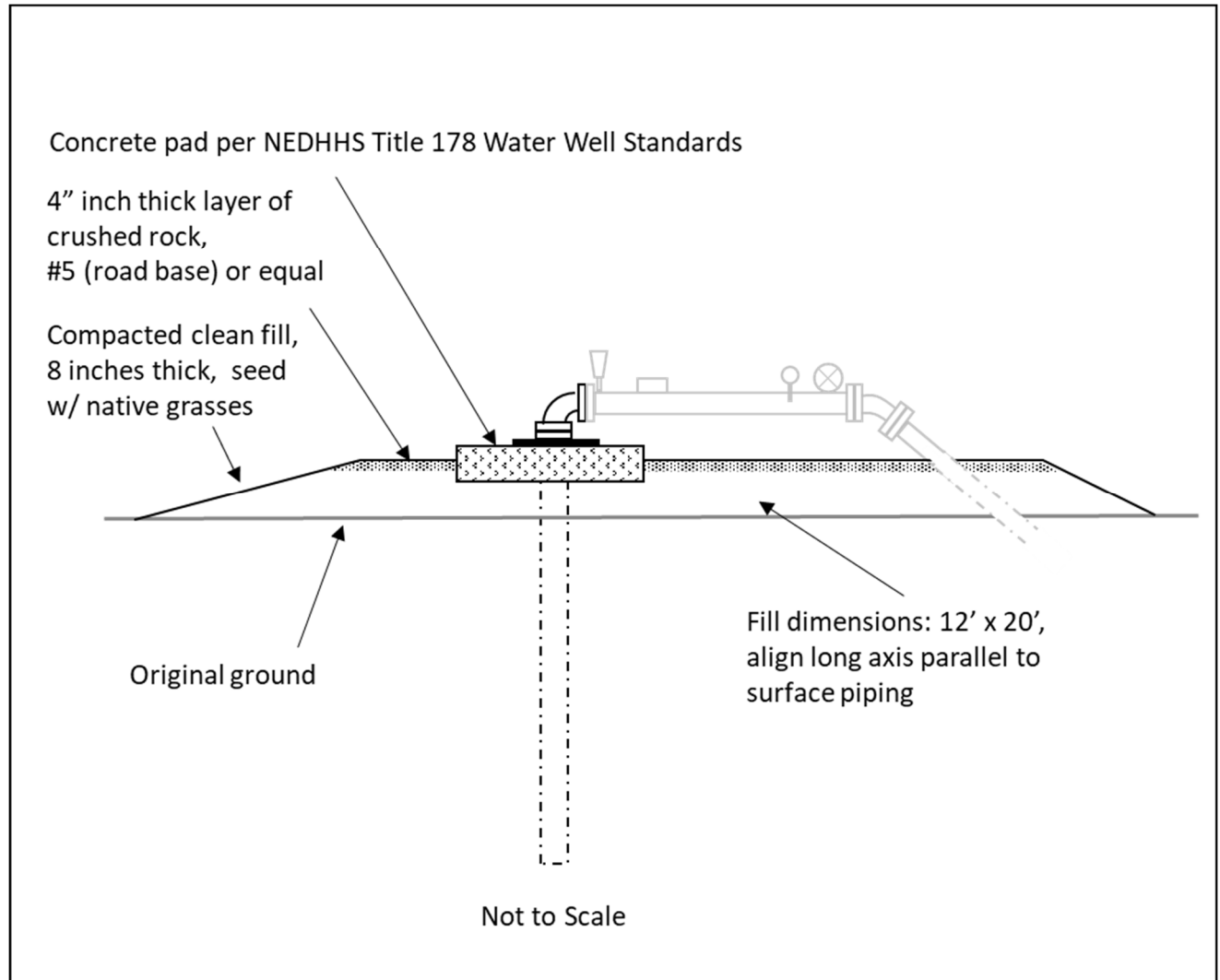
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Drawing Not to Scale. Depths are approximate. Actual depths to be determined by District's representative during construction.

**Figure 2:** Typical well design.

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**Figure 3:** Typical surface facilities and grading.