

**TECHNICAL SPECIFICATIONS  
ASH FORK WELL NO. 3  
B(21-02) 15BBA  
YAVAPAI COUNTY, ARIZONA**

PREPARED FOR:

**Ash Fork Development Association, Inc.**  
P.O. Box 436  
Ash Fork, Arizona 86320

PREPARED BY:

**MATRIX**NEWORLD

**Matrix New World Engineering, Land Surveying  
and Landscape Architecture, PC**  
123 E. Goodwin Street, Suite 200  
Prescott, AZ 86303

DATE:

July 14 , 2023

MATRIX PROJECT NO.:

23-0193

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Kevin Hebert, RG  
Senior Hydrogeologist  
Matrix New World Engineering

Date

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Dylan J. Easthouse, RG  
Senior Hydrogeologist  
Matrix New World Engineering



Expires: 6/30/25

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A	Well Driller Report, Ash Fork Well No. 2



## 1.0 INTRODUCTION

### 1.1 GENERAL OVERVIEW

Work performed under the following specifications includes drilling and testing of one potable well for Ash Fork Development Association, Inc. (AFDA) in Yavapai County, Arizona. A project location map is provided on **Figure 1**. AFDA will serve as the contracting entity. Items of utmost importance to AFDA that require special attention and consideration by CONTRACTOR are outlined below:

- Health and Safety Plan – Section 1.5.4
- Mud Tanks, Discharge, and Cuttings – Section 2.1
- Borehole Drilling – Section 7.3
- Aquifer Testing – Section 8.0

Information regarding the proposed well site and subsurface conditions described in the following sections is an overview. CONTRACTOR shall be responsible to verify and confirm actual drill site conditions prior to submittal of a bid. CONTRACTOR shall design a drilling program for the project that conforms to these specifications. CONTRACTOR should not submit a bid unless the items listed above are clearly understood and accounted for in the project Bid Table. A list of deliverables that are required to be submitted by the CONTRACTOR during performance of the work specified herein is provided in **Table 1**.

### 1.2 LOCATION AND GEOLOGIC SETTING

The proposed Ash Fork Well No. 3 is to be drilled on a 40-acre parcel (APN 302-07-089) owned by AFDA at 45900 N. Bixler Trail in Ash Fork, Arizona. Cadastral coordinates are the northeast  $\frac{1}{4}$  of the northwest  $\frac{1}{4}$  of the northwest  $\frac{1}{4}$  of Section 15, Township 21 North, Range 02 West [B(21-02) 15BBA]. Ash Fork Well No. 3 is planned to be installed approximately 750 feet west of Ash Fork Well No. 2 (ADWR No. 55-590951) that was drilled and constructed in 2002. A Site Map showing the AFDA property and wells is provided on **Figure 2**.

Based on the results of drilling at Well No. 2, the borehole for Well No. 3 is expected to encounter semi-consolidated clay and gravel conglomerate (i.e., alluvium) from ground level to approximately 100 feet below land surface (bls). Below the alluvium, competent rock units including basalt, limestone, sandstone, and granite will be encountered to the planned total depth of 1,400 feet bls. Static water level is approximately 990 feet bls. The Well Driller Report and Geologic Log for Well No. 2 is provided in **Appendix A**.

### 1.3 DEFINITIONS

Throughout these specifications, the term OWNER shall be understood to represent Ash Fork Development Association, Inc. (AFDA). The term CONSULTANT shall be understood to represent Matrix New World Engineering (Matrix). CONTRACTOR shall be the person, firm, or corporation with whom OWNER will sign an agreement setting forth the terms and conditions for the work to be performed, as specified herein. The term SUBCONTRACTOR will apply to any person, firm, or corporation with whom CONTRACTOR signs a secondary agreement for a portion of the scope of work.

### 1.4 SCOPE OF WORK

CONTRACTOR shall be responsible for completing the following scope of work:

1. Borehole drilling
2. Well construction.
3. Well development and testing.

CONTRACTOR shall drill a borehole as a new potable ground water well as specified herein including, but not limited to, CONTRACTOR drilling the borehole to the specified depth using a method, or combination of methods, as approved by CONSULTANT. The well is to be drilled and constructed in two phases: Phase 1 includes drilling a minimum 18-inch diameter borehole and installing 12.75-inch diameter intermediate steel blank casing to approximately 1,000 feet bls. The borehole may be completed in a single pass, or by drilling a pilot borehole followed by reaming. Phase 2 includes drilling a nominal 12-inch diameter borehole in a single pass from 1,000 to 1,400 feet bls followed by installation of a 11-inch diameter screened casing.

Approved drilling methods in the vadose zone down to approximately 1,000 feet bls include direct air rotary with a down-the-hole (DTH) hammer, direct mud rotary, or flooded reverse circulation. Drilling of the borehole in the regional hard rock aquifer (i.e., Tapeats Sandstone) may be accomplished using either direct air rotary or dual-tube reverse circulation only. CONTRACTOR shall not be permitted to use drilling fluids other than air to drill the well borehole below 1,000 feet bls.

A Preliminary Design for Well AF-3 is presented on **Figure 3**. This design is for bid purposes only. OWNER reserves the right to drill beyond the depths specified, or to stop at lesser depths, depending on subsurface conditions. OWNER may modify the dimensions of the well based on information obtained during the drilling.

Lithologic cutting samples shall be collected during borehole drilling and provided to the CONSULTANT for review. Drilling, well installation, well development, well completion, aquifer testing, and final well surveys by CONTRACTOR shall be conducted under the direction of CONSULTANT and OWNER. The dimensions of the well may be modified based on information obtained during drilling and testing of the borehole. OWNER reserves the right to drill beyond the depths specified, or to stop at lesser depths, depending on subsurface conditions. Following drilling of the borehole OWNER reserves the right to cancel the remainder of the project if it is deemed that subsurface conditions do not meet the objectives for a potable well at the site. If necessary, CONTRACTOR will abandon the borehole in accordance with Arizona Department of Water Resources (ADWR) regulations and shall restore the site, as nearly as is practical, to pre-drilled conditions.

## **1.5 PERFORMANCE OF WORK**

### **1.5.1 Contractor Qualifications**

CONTRACTOR shall have no less than five years of experience drilling methods like those discussed in the specifications under similar aquifer conditions in Arizona and shall have recent experience with installing large capacity potable water production wells having similar dimensions. CONTRACTOR shall assign a foreman to oversee all work required by these specifications. CONTRACTOR shall provide with its bid submittal a resume of the foreman, including years of drilling and well construction experience.

CONTRACTOR shall hold a valid ADWR Well Driller's License in the reverse circulation or mud rotary category, a Register of Contractor License type A, A-4, A-16, or L-53, and all other licenses and permits required by federal, state, city or municipal rules and regulations.

### **1.5.2 Operations**

CONTRACTOR shall employ only competent employees for the execution of work and shall always maintain a three-person crew and a minimum of two employees on site while the drilling rig is in operation. All operations shall be performed under the direct and personal supervision of an Arizona licensed well driller with a Registrar of Contractor License type A, A-4, A-16, or L-53. CONTRACTOR shall construct the production well in accordance with the Rules and Regulations of ADWR, Article 8, Well Construction and Licensing of Well Drillers, as amended June 18, 1990. Well construction shall also comply with the guidelines of the Arizona Department of Health Services (ADHS) Engineering Bulletin No. 10 (1978), and all other applicable State, County, or local regulations.

Should the well be lost due to any fault on the part of CONTRACTOR, the well shall be abandoned at no cost to OWNER, in accordance with ADWR Article 8, Rule R12-15-816, and a replacement well shall be constructed in the immediate area. CONSULTANT and OWNER will select the location of the replacement well. Payment for the replacement well will begin once the depth and status at which the original well was terminated has been reached per the Bid Tab. The replacement well shall be completed in accordance with all the terms and conditions stated herein. However, if the inability to complete the well is not due to any fault of CONTRACTOR, CONSULTANT may designate a replacement well location and OWNER shall provide reasonable reimbursement.

Rejection of any materials, work, or equipment by CONSULTANT is at CONTRACTOR's expense, and at no cost to OWNER. If a work delay is caused by CONTRACTOR failing to comply with any item of these specifications, CONTRACTOR will bear the burden of additional expenses, including any additional CONSULTANT charges assessed to OWNER as a direct result of the delay.

### **1.5.3 Confidentiality**

CONTRACTOR shall not disclose any information relating to this project or the well site to anyone other than OWNER or CONSULTANT without written permission from OWNER, except as may be required by law. At all times during the conduct of CONTRACTOR'S services, CONTRACTOR and its employees and agents shall treat the work conducted by CONTRACTOR and its SUBCONTRACTORS and the results thereof as confidential and proprietary to OWNER. Photographs may be taken throughout the project by CONSULTANT and OWNER.

Any questions regarding the purpose or scope of work directed to CONTRACTOR from individuals or entities other than representatives of OWNER or CONSULTANT while work is being conducted for this project should be directed by CONTRACTOR to CONSULTANT or OWNER.

CONTRACTOR shall inform its employees of this provision and shall obtain non-disclosure agreements from all SUBCONTRACTORS who will be involved in the performance of any of the work and provide OWNER with copies of the executed non-disclosure agreements. This provision shall survive the termination of the contracted work tasks.

### **1.5.4 Health and Safety**

CONTRACTOR is responsible for assuring that CONTRACTOR and SUBCONTRACTOR personnel conform to all state and federal health and safety rules and regulations. The entire responsibility for the health and safety of CONTRACTOR'S employees is the sole responsibility of CONTRACTOR. CONTRACTOR must provide a Site Safety Plan for this project to its employees in accordance with

applicable Occupational Safety and Health Administration (OSHA) requirements. CONTRACTOR must assure that all CONTRACTOR personnel and SUBCONTRACTORS at the well site are thoroughly familiar with the Site Safety Plan for the proposed work. The Site Safety Plan must be provided to CONSULTANT and OWNER at least 5 days prior to mobilization to the well site. A copy of the Site Safety Plan must be easily accessible on the site for the duration of the project. In addition, CONTRACTOR personnel are required to have been trained in the use of any personal protective equipment required by the Site Safety Plan. CONTRACTOR shall meet the requirements of the Site Safety Plan at its own cost.

CONTRACTOR shall have hearing protection available for any authorized visitors, OWNER, and CONSULTANT.

## **2.0 PROTECTION OF SITE**

### **2.1 GENERAL**

CONTRACTOR shall take all necessary precautions to preserve the well site, as practical, in its present condition. CONTRACTOR shall be responsible for replacing any damaged items. All litter and debris will be cleaned up daily and placed in containers for offsite disposal by CONTRACTOR in a legal manner. CONTRACTOR should be aware of the potential for theft and vandalism and is responsible to secure the site and its equipment at its own expense.

A plastic tarp shall be placed beneath the drilling rig during mobilization to protect the site from accidental leaks or spills of petroleum products and will remain beneath the rig until demobilization. Any spills or leaks of oil, hydraulic fluid, or petroleum must be addressed immediately. Excavated mud pits must be barricaded to prevent accidental injury of employees and/or onsite visitors.

Fluids and cuttings generated during drilling shall be contained onsite in a pit or above ground tank provided by CONTRACTOR without damage to the property, contamination of other wells or waterways, or creation of a nuisance. Excess water that is free of suspended sediment, and as approved by CONSULTANT, may be disposed in an undeveloped portion of the property in an area designated by OWNER. Cuttings generated during drilling may be evenly spread on the site. Drilling mud must be removed from the site and disposed in a landfill at CONTRACTOR expense.

After completion of the work, CONTRACTOR shall remove all debris, waste, trash, and unused materials or supplies; and shall remove all signs of construction activities including temporary work areas, temporary structures, stockpiles of waste materials; and shall restore the site, to satisfaction of OWNER.

### **2.2 SITE ACCESS**

OWNER shall be responsible for creating access to the site. CONTRACTOR is responsible for maintaining the access road in good condition throughout the drilling program. CONTRACTOR is solely responsible for delays in drilling or well completion because of its failure to maintain site access.

### **3.0 UTILITIES**

#### **3.1 WATER**

CONTRACTOR is responsible to estimate the quantity of water necessary for the project and for obtaining potable water to the well site. CONTRACTOR shall be responsible for obtaining the necessary permits and meters to obtain water and properly monitor usage from the source. A standpipe that fills up to 300 gallons per minute (gpm) is available from Ash Fork Water Service approximately 2-miles from the Project. CONTRACTOR is responsible for the cost of the water and to provide any traffic crossings (if required), connections, or ancillary equipment required for the use of the water at the site.

#### **3.2 ELECTRICITY**

CONTRACTOR shall provide, at its own expense, all power required for its operations under the contract.

#### **3.3 UNDERGROUND UTILITIES**

Location of all subsurface utilities at the borehole site shall be the responsibility of CONTRACTOR. Utility damage, caused by negligent actions of CONTRACTOR, shall be repaired at CONTRACTOR'S expense in accordance with the Utility specifications. CONTRACTOR shall notify Arizona 811 (Bluestake) prior to drilling and confirm the absence of any underground utilities.

#### **3.4 SANITARY FACILITIES**

CONTRACTOR will be required to have at the drill site a portable "chemical" toilet for personnel use.

#### 4.0 EQUIPMENT

CONTRACTOR shall furnish and maintain in safe and efficient working condition all equipment necessary to perform the specified work, including a drilling rig or rigs capable of performing the specified operations to the specified depths; and pumping, testing, sampling, and auxiliary equipment as specified or required to complete the described tasks. The drilling rig, pumping equipment, and auxiliary equipment used for this project shall be well maintained and shall meet OSHA standards. All high-pressure hoses shall be equipped with a safety chain for protection in the event of hose failure. If compressed air is introduced into the well during drilling or well development, the air from the compressor must be treated by passage through a high-volume carbon or coalescing filter to remove organic contaminants (e.g., compressor lubrication oil). The drilling rig shall have a derrick rating and hook load capacity capable of lifting no less than 60,000 pounds or 1.5 times the total casing weight, whichever is greater. CONTRACTOR will be required to have, for air lifting purposes, a compressor capable of supplying a minimum of 750 cubic feet per minute (cfm) at 350 pounds per square inch (psi).

Prior to the start of drilling, CONTRACTOR shall decontaminate the drill rig and downhole tools by steam cleaning. CONSULTANT must approve the method and extent of steam cleaning. CONTRACTOR will be required to provide a letter of certification to CONSULTANT of the decontamination of CONTRACTOR'S equipment, prior to utilization. CONTRACTOR may certify, in writing, the decontamination of critical (downhole) pieces of drilling equipment in lieu of actual steam cleaning, provided the downhole pieces of drilling equipment have not been in contact with any potential contaminants, hazardous or toxic materials since the last decontamination. All necessary steam cleaning will be conducted at CONTRACTOR'S expense.



## **5.0 REPORTS, LOGS, AND RECORDS**

### **5.1 GENERAL**

CONTRACTOR shall keep accurate and legible logs as described below. The forms for penetration rate log, daily driller's report, and drilling fluid control log must be approved by CONSULTANT. CONSULTANT and OWNER will visit the site periodically to observe drilling operations, log cuttings, or to collect CONTRACTOR logs. CONSULTANT will be on site full time to document all well construction activities.

### **5.2 PENETRATION RATE LOG**

During drilling of the borehole, a time log shall be kept showing the actual penetration time required to drill each foot of the borehole. The types and sizes of bits used in each interval of the borehole shall be noted in this log and whether designed for soft, medium, or hard formations, including approximate weight of the drill string and weight on the bit, as measured by the weight indicator on the drill rig, in addition to the rotation speed of the bit during drilling of the various types of formation in the various sections of the borehole. This log shall be available for review by CONSULTANT throughout the drilling program and shall be delivered to CONSULTANT upon completion of drilling.

### **5.3 DAILY DRILLER'S REPORT**

During drilling and construction of the well, a detailed driller's report shall be maintained and provided daily to CONSULTANT at the well site. The daily driller's report forms must be International Association of Drilling Contractors (IADC) or equal approved by CONSULTANT. The report shall give a complete description of all formations encountered including number of feet drilled, number of hours on the job, shutdown due to breakdown, type of bit used, weight of the collars included in the drill string, weight on the bit, amount and type of drilling fluids used, plumbness test results at each 100-foot interval, and length and type of casing set; and other pertinent data as requested by CONSULTANT. CONTRACTOR will submit the log daily to CONSULTANT.

### **5.4 DRILLER'S LOGS**

CONTRACTOR shall prepare a detailed lithologic log of the pilot borehole in conformance with ADWR requirements. The lithologic log shall include the reference point for all depth measurements, a generalized description of each formation encountered, the depth at which each formation is encountered, and the thickness of each formation. A lithologic log prepared by CONSULTANT will be

made available to CONTRACTOR to assist in preparation of the Well Driller Log. CONTRACTOR shall furnish CONSULTANT and OWNER a copy of the lithologic log.

## **5.5 DRILLING FLUID RECORD**

CONTRACTOR shall maintain a log of drilling fluid properties during drilling of the borehole. The drilling fluid record will be recorded on an American Petroleum Institute (API)-approved form and will document all items listed in Section 6.1. The drilling fluid log shall be available for review by CONSULTANT and OWNER throughout the course of drilling and shall be provided daily to CONSULTANT.

## **6.0 DRILLING FLUID CONTROL PROGRAM**

### **6.1 GENERAL REQUIREMENTS**

CONTRACTOR shall maintain complete and accurate records at the site to show: 1) the time, depth, and results of all drilling fluid tests; 2) all materials added to the system, i.e., kind, amount, time, and depth; and 3) variances or modifications from the agreed upon fluid program such as time, depth, reason, and authorization. CONTRACTOR is responsible for maintaining an adequate supply of drilling fluid additives (including lost circulation material) at the drilling site.

### **6.2 DRILLING FLUID CONTROL PLAN**

Drilling fluid tests will be required during periods when any drilling fluid additives are being circulated in the borehole. Physical and chemical properties of the drilling fluid are to be measured in accordance with the procedures of the API Standard RP 13B "Standard Procedures for Testing Drilling Fluids". Test samples must be collected at the rig pump discharge line with care taken to assure a true and representative sample.

Drilling fluid tests shall be conducted a minimum of 1) every 24 circulating-hours, 2) when significant changes to the drilling fluid are made, 3) whenever conditions appear to have changed or when problems arise, or 4) at the request of CONSULTANT. A Marsh-type viscosity funnel and a mud scale will be available at the well site during all drilling operations, and upon request, will be made available to CONSULTANT.

CONTRACTOR shall provide a drilling fluid control plan to CONSULTANT 48 hours prior to drilling. The plan will outline specific drilling fluids CONTRACTOR plans to use, how anticipated changes in drilling conditions will affect the drilling fluid control plan, fluid testing procedures, and equipment that will be used. CONSULTANT must approve the drilling fluid control plan.

### **6.3 SPECIFIC CONDITIONS**

During drilling of the borehole and the installation of the well, extra care will be required to minimize chemical and biological disturbance of the borehole. The use of organic drilling fluid materials (such as starch, guar, or cottonseed hulls) will not be accepted for drilling. Material Safety Data Sheets (MSDS) from the manufacturer for all drilling fluid additives must be provided to CONSULTANT for review prior to their use. CONTRACTOR shall be responsible for maintaining the quality of the drilling fluid to assure:

1. Protection of water bearing and potential water bearing formations exposed to the borehole
2. Collection of representative samples of the formation material
3. Maximum development capability and optimum potential yield of the completed well
4. Mitigation of formation-caused drilling problems (e.g., heaving sands, swelling clays, lost circulation)
5. Protection of the integrity of the borehole during drilling operations
6. Ability to conduct thorough and accurate geophysical logging of the borehole.

As noted above in Section 1.4, CONTRACTOR shall not be permitted to use drilling fluids other than air to drill the borehole below 1,000 feet bls.

#### **6.4 LOST CIRCULATION**

During drilling of the production well, if there is no return of circulated drilling fluid for a period of at least two continuous hours, OWNER will compensate CONTRACTOR for the period of drilling under lost circulation conditions at CONTRACTOR'S hourly rate. Also, OWNER will provide compensation including CONTRACTOR'S percent markup (not to exceed 15%) for all drilling fluid materials and additives used during the period of lost circulation. The conditions of this Section shall apply from the beginning of total lost circulation, with no returns at the land surface, and shall continue only until such time as drilling fluid circulation is regained, with full or partial returns of drilling fluid at the land surface. After an initial lost circulation event has occurred, should circulation be lost again, the conditions of this paragraph will go into effect immediately, and continue until such time as drilling fluid circulation is regained with full or partial returns of drilling fluid at the land surface.

CONTRACTOR shall notify CONSULTANT any time CONTRACTOR experiences lost circulation and intends to invoke the lost circulation clause. Notification must be within the hour of observed lost circulation, and a written field order to continue shall be given to CONTRACTOR, or no compensation for lost circulation will be made.

## 7.0 WELL DRILLING AND INSTALLATION

### 7.1 GENERAL DRILLING METHODS

The drilling of the borehole in the vadose zone from ground surface to approximately 1,000 feet bls may be conducted by using one or more of the following methods: air rotary, mud rotary, and flooded reverse circulation. After the intermediate casing is installed, drilling of the lower borehole in the regional hard rock aquifer may be conducted by using either direct air rotary (with a tricone bit or DTH), or dual tube reverse air and flooded circulation (i.e., with adequate submergence below static water level). No drilling fluids other than air may be used to complete the lower borehole below 1,000 feet bls. The borehole diameters of these specifications should be considered the minimum allowable. CONTRACTOR shall be responsible for designing and controlling a drilling program that conforms to this specification.

### 7.2 SURFACE CASING INSTALLATION

#### 7.2.1 Drilling

The surface casing borehole for the well shall be drilled to a minimum 30-inches in diameter, to a depth of no less than 39 feet bls. CONSULTANT reserves the right to direct drilling of the surface casing borehole to a greater depth depending on geologic formations and other subsurface conditions. The surface casing boring may be drilled using bucket auger.

#### 7.2.2 Materials

##### 7.2.2.1 Casing

The surface casing for the well (**Figure 3**) shall be new and manufactured in accordance with American Society for Testing and Materials (ASTM) Specification A53 Grade B low carbon steel. This casing shall have a 22-inch outside diameter (OD) and have a minimum 0.375-inch wall thickness. The minimum total length of the surface casing shall be 40 feet to allow for a minimum 1-foot stickup above land surface. The casing shall be factory made in not less than 20-foot lengths.

Prior to casing installation, CONTRACTOR shall submit certified test reports to CONSULTANT to demonstrate compliance with the physical and chemical properties of the surface casing steel that are specified herein.

### 7.2.2.2 Cement Grout Seal

The surface seal for the surface casing shall consist of a slurry of neat cement or sand cement. CONSULTANT must approve the specific constituents and mix design of the surface seal. CONTRACTOR shall provide a vendor-supplied slurry mix design (with mix ratios and ASTM designations for the constituents) to CONSULTANT at least three (3) days prior to placement of the surface seal.

The surface casing cement grout seal material shall consist of a cement slurry containing 5.2 to 6.0 gallons of water per 94-pound sack of Portland cement. The Portland cement shall conform to ASTM Standard C150, Type II. The cement grout weight shall be measured prior to installation, as an indicator of the cement-water mix ratio. The cement grout slurry shall not exceed 17 pounds per gallon (lb./gal) (or 127 pounds per cubic foot, lb./cf). The cement grout slurry may contain sand or aggregate, which shall not exceed 50 percent by volume of the cement. The aggregate used should be clean and washed sand and gravel with no organic matter and not coarser than 1-inch minus. Water shall be added with the sand additive as required. Bentonite, as an additive, must be in powder form and shall not exceed five percent by weight of the cement, or cement and sand. Water added for bentonite shall not exceed 1.3 gallons per 1.88 pounds of bentonite (two percent by weight in cement). Accelerator additives, such as calcium chloride, shall not exceed two percent by weight of the cement. Sodium chloride, as an additive, shall not exceed two percent by weight of the water used to prepare the grout slurry. Water used for preparing the grout slurry shall be potable. CONSULTANT must approve the water source and the specific constituents of the cement grout.

If the cement grout is not mixed on-site, CONTRACTOR must provide the specific constituents of the cement grout to CONSULTANT prior to placement of the grout. The cement specified should meet a 2,800-psi strength and 8-inch slump if delivered premixed to the site. The cement grout slurry shall be mixed thoroughly and must be free of lumps to the satisfaction of CONSULTANT. Cement grout that does not comply with this specification will be rejected.

### 7.2.3 Surface Casing Installation

A design for the surface casing completion is shown on **Figure 3**. Surface casing, conforming to Section 7.2.2.1, shall be placed from one foot above the ground surface to a minimum of 39 feet bls.

Joints in the surface casing shall be field welded in accordance with applicable provisions of the American Water Works Association (AWWA) Standard C206 for welded joints. Alignment straps, or a CONSULTANT approved equal may be used to align the well casing sections prior to welding. Prior to welding, the ends of each casing section shall be free of grease, paint, cement, dirt, oil, scale, slag,

heavy rust, or any other foreign material. Ends of casing sections shall be sufficiently oriented to assure 100% penetration of the weld, and adequate welding passes shall be made to provide for complete filling of the joined casing ends. Each welding pass shall be smooth and free of blisters, scale, bubbles, cracks, and imperfections that would contribute to a lack of strength of the overall welded joint. All well casing joints or overlaps shall be made water-tight to prevent the degradation of the water supply by the migration of poor-quality water. An experienced welder shall perform all welding.

#### **7.2.4 Surface Seal Installation**

The cement grout slurry conforming to the specification in Section 7.2.2.2 shall be placed from the base of the surface casing to the ground surface utilizing a positive action cement pump and tremie pipe. Care shall be taken to maintain an equalization of pressures to the extent necessary to prevent collapse of the surface casing. The grout seal shall completely fill the annular space and form a continuous seal between the surface casing and the wall of the borehole. The surface casing grout seal may be placed in two separate installations to completely extend the top of the seal to the ground surface. The surface casing shall be maintained centered in the hole before the occurrence of the initial set of the cement grout. CONSULTANT must approve the method of grout installation. A minimum curing time for the surface casing grout seal is 16-hours, and the cement grout must obtain a compressive strength of 500 psi.

### **7.3 DRILLING**

The well borehole may be drilled in a single pass to a minimum of 18-inches to approximately 1,000 feet bls. Alternatively, the borehole may be completed by drilling a nominal 12-inch diameter pilot borehole to 1,000 feet bls, followed by reaming of the borehole to 18-inches. After installation of an intermediate casing and annular cement seal to 1,000 feet bls, a 12-inch well borehole will be drilled to a total depth of 1,400 feet bls.

#### **7.3.1 Lithologic Samples**

During the drilling of the pilot borehole, CONTRACTOR shall collect and preserve for CONSULTANT, two duplicate samples of the drill cuttings. The samples shall be collected at 10-foot intervals from the base of the surface borehole to the bottom of the borehole. CONTRACTOR shall provide an acceptable means of sampling the drilled cuttings at the discharge pipe. Catching the drilled cutting samples in sieves will not be allowed. A sump-type or baffle-type sample catching device shall be provided by CONTRACTOR. Each cutting sample shall be carefully collected from the sampling point, and the sample catching device shall be cleaned of all cuttings after each sample is taken.

The samples shall be placed in labeled (well ID, date, depth interval) sealable cloth bags furnished by CONTRACTOR (1-bags per sample interval). In addition, as an on-site visual record of the borehole stratigraphy, each sample shall be laid out in a sample storage area on a water-proof tarp or ground cloth for each sampled interval in descending order. The storage area and ground cloth must allow samples to be maintained in sequence and unmixed with surface material or other samples until they have been examined and logged by CONSULTANT. CONTRACTOR shall submit details of the proposed formation sampling method including the sampling equipment to be used to CONSULTANT prior to the start of drilling.

### **7.3.2 Geophysical Logging**

CONTRACTOR will provide geophysical logging services on up to three (3) separate occasions during drilling of the borehole(s): 1) at the completion of a pilot borehole to approximately 1,000 feet bls (magnetic deviation survey only), 2) completion of 18-inch borehole to 1,000 feet bls (magnetic deviation, gamma, and caliper surveys) and 3) at total depth of the completed well borehole at approximately 1,400 feet bls. The full suite of geophysical logs to be conducted in the borehole from approximately 1,000 to 1,400 feet bls are as follows: caliper, spontaneous potential, single point resistivity, 64-inch, 16-inch, and 8-inch normal resistivity, sonic, gamma ray, acoustic televiewer, and temperature.

## **7.4 WELL MATERIALS AND INSTALLATION**

### **7.4.1 Materials**

The materials that are anticipated to be installed in the production well are described below. The actual type and quantities of materials are subject to change based on cost, availability, and information obtained during the drilling of the boreholes.

CONTRACTOR shall be responsible for the accuracy of the well material order necessary to comply with the Final Well Design. CONTRACTOR shall be responsible for coordinating the timely delivery of well materials for inspection and approval by CONSULTANT. Well materials not within the requirements described below or not within factory specifications for roundness may be rejected. Well materials damaged during loading, transportation, or unloading may be rejected by CONSULTANT. CONTRACTOR shall be responsible for all costs or additional work associated with damaged well materials.



*Prior to casing installation, CONTRACTOR shall submit certified test reports or manufacturer provided specifications sheets to CONSULTANT to demonstrate compliance with the physical and chemical properties of the casings that are specified herein.*

#### **7.4.1.1 Intermediate Well Casing**

Low carbon steel (LCS) intermediate blank casing shall be new and manufactured in accordance with ASTM Specification A53 Grade B, or similar, and shall have a 12.75-inch OD. Thickness of the well casing(s) shall be a minimum of 0.250-inches. The casing shall be factory assembled in not less than 20-foot sections unless shorter lengths are required by the Final Well Design.

#### **7.4.1.2 Well Screen**

Screen casing shall be new Type 304 stainless steel that is manufactured with a continuous wire-wrap design that has a 11.0-inch OD, a 9.9-inch ID, and with 0.080-inch-wide slots that results in an open area of 149 in<sup>2</sup>/ft. The screen casing shall include an 8-inch welded ring (blank casing) on both ends. The bottom piece shall be welded with a stainless-steel bullnose cap. The total length of screen well casing is approximately 400 feet (**Figure 3**).

#### **7.4.2 Casing Installation**

The intermediate well casing shall be set by CONTRACTOR in the open borehole at depth intervals specified by CONSULTANT. Casing centralizers shall be utilized and secured to the well casing at intervals of not greater than 80 feet. The intermediate casing shall be hung in suspension until the cement grout seal has been installed. CONTRACTOR will be required to work continuously, on a 24-hour per day, 7-day per week basis while installing and completing the well.

The 11-inch OD screen casing shall be set within the nominal 12-inch borehole so as not to interfere in any way with operation of an 8-inch diameter pump and motor assembly. Details for the production well construction are shown in **Figure 3**.

#### **7.4.2.1 Joints in Well Casing**

Joints in the well casing shall be field welded in accordance with applicable provisions of the AWWA Standard C206 for welded joints. All well casing joints shall be aligned with alignment straps or other means as approved by CONSULTANT prior to welding. A welding sequence will be followed which will avoid excessive distortion. The ends of the casing lengths shall be ground, or sufficiently scarfed, to remove sharp edges or burrs, and be free of all oil, grease, dirt, paint, cement, scale, slag or rust, or other foreign material. Section ends shall either be installed with joint collars or be beveled to a 30-

degree angle, perpendicular to the axis of the casing, to facilitate proper alignment of joined casing sections, and shall not vary more than 0.010 inches at any point from a true plane at right angles to the axis of the casing. An experienced welder shall perform all welds, shall penetrate 100% of each beveled pipe end and completely fill the bevel, and be watertight for prevention of poor-quality or contaminated water from entering the well through the casing joints.

#### **7.4.2.2 Grout Seal**

The intermediate well casing grout seal shall consist of a cement slurry conforming to the specification in Section 7.2.2.2. The grout shall be placed to completely fill the annular space between the 12.75-inch OD intermediate well casing and the wall of the nominal 18-inch diameter borehole from 1,000 feet bls to the surface (**Figure 3**).

The grout shall be placed by pumping through a tremie pipe. Prior to pumping the cement grout through the tremie pipe into the annulus, the cement grout shall be passed through a 2-inch slotted bar strainer, to remove any unmixed lumps. When installing the grout, the discharge end of the tremie shall be continuously submerged in the grout until the zone to be grouted is filled.

The well casing shall be suspended in the borehole to maintain tension on the pipe throughout the grouting operation. The grout seal shall be placed in as few lifts as possible without compromising the stability of the well casing. CONSULTANT must approve the specific method of installation. A minimum curing time for the well casing cement grout seal is 12 hours, and the cement grout must obtain a compressive strength of 500 psi.

#### **7.4.2.3 Surface Completion**

The intermediate well casing stickup shall be a minimum 2-feet above existing ground level. A well casing cover plate with access port shall be installed to the satisfaction of CONSULTANT. CONTRACTOR shall secure the annulus between the well casing(s) by welding a steel plate or plates.

### **7.5 WELL PLUMBNESS AND ALIGNMENT**

Tests for plumbness and alignment shall be made by CONTRACTOR both during drilling and after completion of the well. If the well fails the plumbness and alignment tests, CONTRACTOR must correct the plumbness and alignment to the satisfaction and approval of CONSULTANT. Plumbness and alignment correction costs will be at the expense of CONTRACTOR.

During drilling of the borehole(s), plumbness and alignment tests shall be performed by CONTRACTOR by use of an inclinometer (Eastman mechanical drift indicator available from the Eastman Oil Well

Survey Company, or equal) at 100-foot intervals. A 3-degree unit shall be used with the inclinometer. The maximum acceptable drift from vertical shall be no more than 0.50 degree, unless otherwise approved by CONSULTANT and OWNER.

At the completion of borehole drilling, plumbness and alignment shall be tested using a Magnetic Deviation Tool or other device approved by the CONSULTANT. The maximum acceptable drift shall not exceed two-thirds the inside diameter of the borehole per 100 feet of depth as specified by AWWA Specification document A100-97, Section 4.7.9.2. Based on the Preliminary Well Design (**Figure 3**), plumbness tolerance for the pilot borehole of Well AF-3 is 80-inches at 1,000 feet deep. If the borehole does not conform to AWWA A100-97, Section 4.7.9.2, CONTRACTOR must submit to CONSULTANT a written plan of corrective action.

Final plumbness and alignment of the cased well shall be measured by a gyroscopic survey. If a dogleg in the well casing is observed, the plumbness and alignment of the well casing shall be tested further by lowering a 40-foot dummy casing string to the bottom of the well as specified by AWWA Specification document A100-97, Section 4.7.9.3, and Appendix D. The outer diameter of the dummy shall be 0.5-inch less than the inside diameter of the casing and screen. The dummy shall consist of a rigid spindle of 6-inch diameter extra heavy steel pipe with three rings rigidly fixed to the pipe, so they cannot move longitudinally along the pipe. The rings shall be truly cylindrical and shall be placed one at each end of the dummy and with one ring in the center. The rings shall consist of suitable materials which will not harm the interior of the casing while being lowered or raised. Should the dummy fail to move freely throughout the entire length of the casing and screen, the plumbness and/or alignment of the well casing shall be corrected by CONTRACTOR at its own expense. The dummy test for plumbness and alignment must be witnessed by CONSULTANT.

## **7.6 VIDEO SURVEY**

After completion of the well, CONTRACTOR shall provide a color video survey of the well performed by an independent SUBCONTRACTOR. The video survey camera shall include downward-looking and side-view capabilities. The quality and clarity of the well video must be acceptable to CONSULTANT and OWNER. CONSULTANT shall approve any well additives to increase the clarity of the video. The video survey shall be conducted under the observation of CONSULTANT. Two (2) copies of the final well video shall be provided by CONTRACTOR to CONSULTANT prior to final acceptance and payment for the well.

## **8.0 PUMP DEVELOPMENT AND TESTING**

### **8.1 GENERAL**

Following construction of the well, CONTRACTOR shall furnish a large capacity temporary submersible pump or line shaft turbine pump for purposes of well development and aquifer testing. Aquifer testing of the well will consist of a 16-hour step-rate discharge test, and a 48-hour constant-rate discharge test. The pumping rate of the 48-hour constant-rate discharge test will be determined based on results of the step-rate discharge test. A 48-hour aquifer recovery test will be performed after the constant-rate discharge test. CONSULTANT and OWNER reserve the right to extend or shorten the duration(s) of the pumping tests.

### **8.2 TEST EQUIPMENT**

CONTRACTOR shall furnish pumping equipment with satisfactory throttling devices or gate valves to pump the well at various rates ranging from 100 to 180 gpm from an anticipated pump setting of 1,350 feet bls. The depth setting of the pump shall be determined by CONSULTANT based on the Final Well Design. CONTRACTOR shall provide ample power and fuel to operate the pump assembly without interruption for a minimum period of 48 hours. The test pump, motor, and accessories must be approved by CONSULTANT prior to mobilization.

CONTRACTOR shall install two (2) PVC sounding tubes with a minimum 7/8-inch inside diameter from the top of the well casing to the level of the pump. The sounding tubes must be capped on bottom and have factory slots in the bottom 80 feet. Sounding tubes shall be de-burred to prevent damage to pressure transducers and water level sounder probes. CONTRACTOR is responsible to install the sounder tubes in a manner as to avoid spiraling around the column pipe.

CONTRACTOR shall provide two flow meters: an orifice weir and an in-line flow meter that provides readings of instantaneous flow and a totalizer. CONSULTANT must approve the discharge measurement devices. CONTRACTOR shall provide CONSULTANT with documentation regarding the accuracy of the in-line meters prior to testing. CONTRACTOR shall install ports on the discharge line at points acceptable to CONSULTANT for purposes of measuring sand content of the discharge, to collect water samples (e.g., spigot) and to monitor line pressure. CONTRACTOR shall furnish a Rossum sand sampler to measure sand content in accordance with AWWA Standard A100-84.

### **8.2.1 Equipment Decontamination and Well Disinfection**

CONTRACTOR shall use a high-pressure steam cleaner to decontaminate all down-well test pumping equipment, sounder tube, surface piping, fittings, and valves prior to their installation. At the conclusion of pump and surge development, and prior to the step-rate discharge test, CONTRACTOR shall disinfect the well using a granular or liquid sodium hypochlorite or similar disinfectant (other than calcium hypochlorite) at 0.5-pounds per vertical foot of submergence, based on 70 percent chlorine content. CONTRACTOR is responsible for application of the disinfecting agent uniformly throughout the entire screened portion of the well. Chlorinated water within the well casing and pump column must have a chlorine residual no less than 50 milligrams per liter (mg/L) and shall be allowed to remain in the well for at least 12 hours. The specific method used to disinfect the well must be approved by CONSULTANT. Disinfection of the well shall conform to AWWA Standard C654-13.

CONSULTANT shall collect a groundwater sample during the step-rate discharge test that will be analyzed by a laboratory for the presence of total coliform. If coliform is present, CONTRACTOR shall re-chlorinate the well prior to the start of the constant-rate test.

### **8.3 PUMP DISCHARGE**

CONTRACTOR shall operate the pump at discharge rate(s) as directed by CONSULTANT. The discharge rate shall be controlled and maintained for the entire test duration with an accuracy of plus or minus five percent. The discharge pipe shall be oriented in such a manner as to ensure that the pipe always remains full of water at the orifice weir and flow meter locations. CONTRACTOR shall provide for safe and dry access to the orifice weir. At the request of CONSULTANT, CONTRACTOR is required to provide a surge box and a high volume/low head booster pump to convey the discharge a sufficient distance to provide safe and dry access to the orifice weir.

OWNER and CONSULTANT will approve the point of discharge. For bidding purposes, water discharged during pump development and aquifer testing activities shall be directed 100-feet west of the well site. CONTRACTOR shall provide all piping and fittings required to discharge to an approved location.

CONTRACTOR is responsible for obtaining all applicable local, City, County, or State permits, including an AZPDES De Minimus Permit, if required. Pump and surge development shall be conducted until water quality field parameters (e.g., pH, temperature, and specific conductance) have stabilized and sand content is less than 5 mg/L after 2-hours pumping at the design pump capacity. Unless otherwise approved by CONSULTANT, CONTRACTOR shall not remove pump equipment from the well for a minimum of 48 hours after conclusion of the constant rate discharge test.

## **9.0 VISITATION AND INSPECTION**

CONTRACTOR agrees, at any reasonable time during the term of work, that CONSULTANT, OWNER, or any of their duly authorized representatives, shall have access to CONTRACTOR'S facilities and have the right to examine books, documents, and records of CONTRACTOR involving transactions related to these specifications.

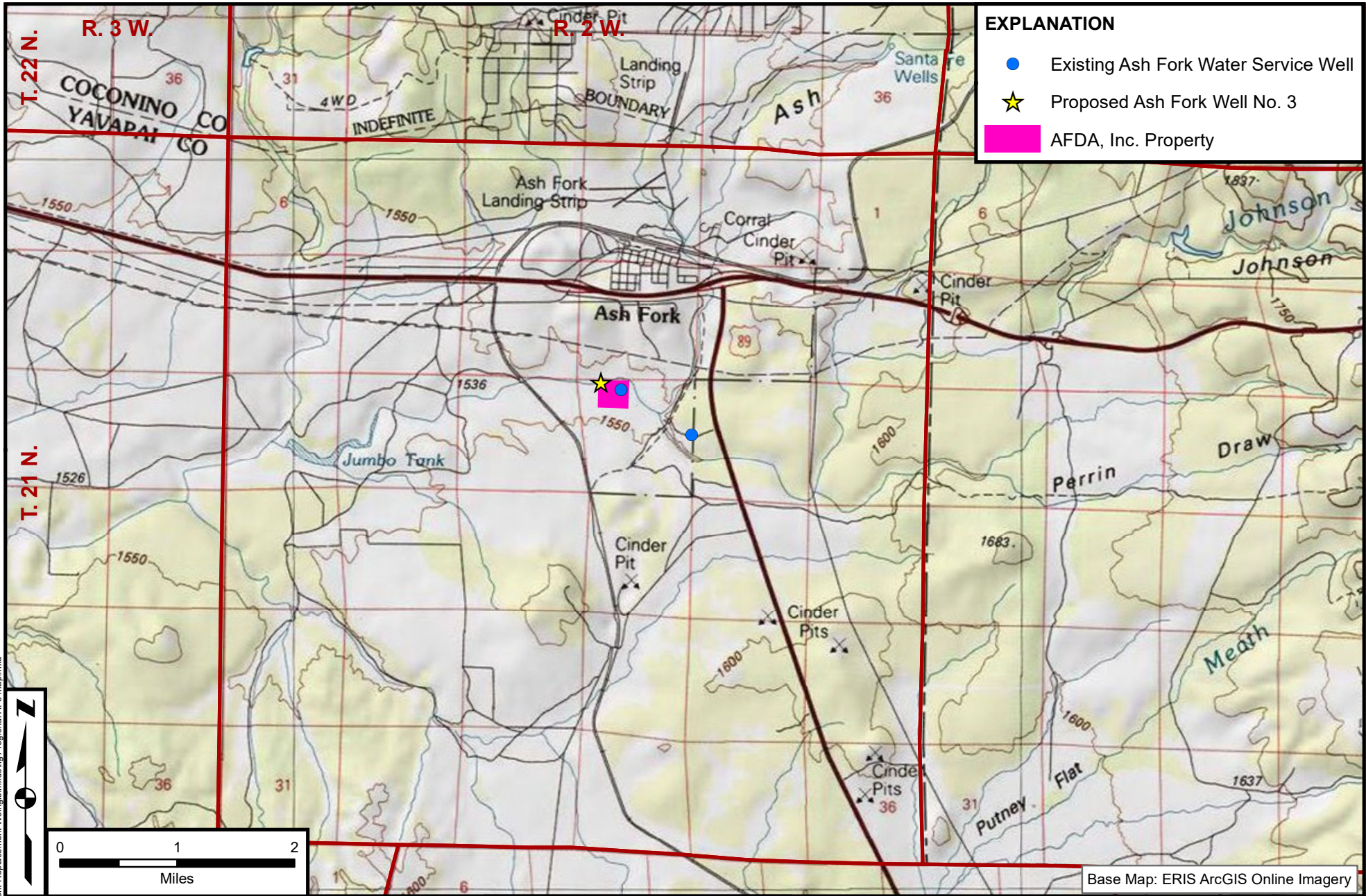
CONTRACTOR further agrees to include in all subcontracts hereunder, if any, a provision that SUBCONTRACTOR agrees that CONSULTANT, OWNER, or any of their duly authorized representatives, shall have access to SUBCONTRACTOR'S facilities, and have the right to examine any books, documents, and records of SUBCONTRACTOR involving transactions related to the subcontract and these specifications.

## 10.0 MEASUREMENT AND PAYMENT

Compensation for all work to be performed under this specification shall be made under the payment items presented in the Bid Tab (**Table 2**). The prices for the said payment items shall be full compensation for all labor, material, equipment, tax, bond, and insurance costs in connection therewith. Principal features of the work to be included under the various payment items will be on a linear foot, hourly, daily, per ton, per cubic yard, or lump sum basis, as designated. Quantities are not guaranteed. Final payment will be based on actual quantities installed; CONTRACTOR shall not be compensated for materials that are not installed. If the required quantity of any item listed in the Bid Tab is increased by Change Order, the unit price set forth in the Bid Tab shall apply to said increased quantity.

## FIGURES





**EXPLANATION**

- Existing Ash Fork Water Service Well
- ★ Proposed Ash Fork Well No. 3
- AFDA, Inc. Property

C:\mydocs\agrcp\023-0178\_Ash Fork Replacement Well\fig1\regional\_AF3.mxd

**TECHNICAL SPECIFICATIONS**  
**ASH FORK DEVELOPMENT ASSOCIATION, INC.**  
**ASH FORK WELL NO. 3**  
**YAVAPAI COUNTY, ARIZONA**

**MATRIX****NEWORLD**  
 Engineering Progress

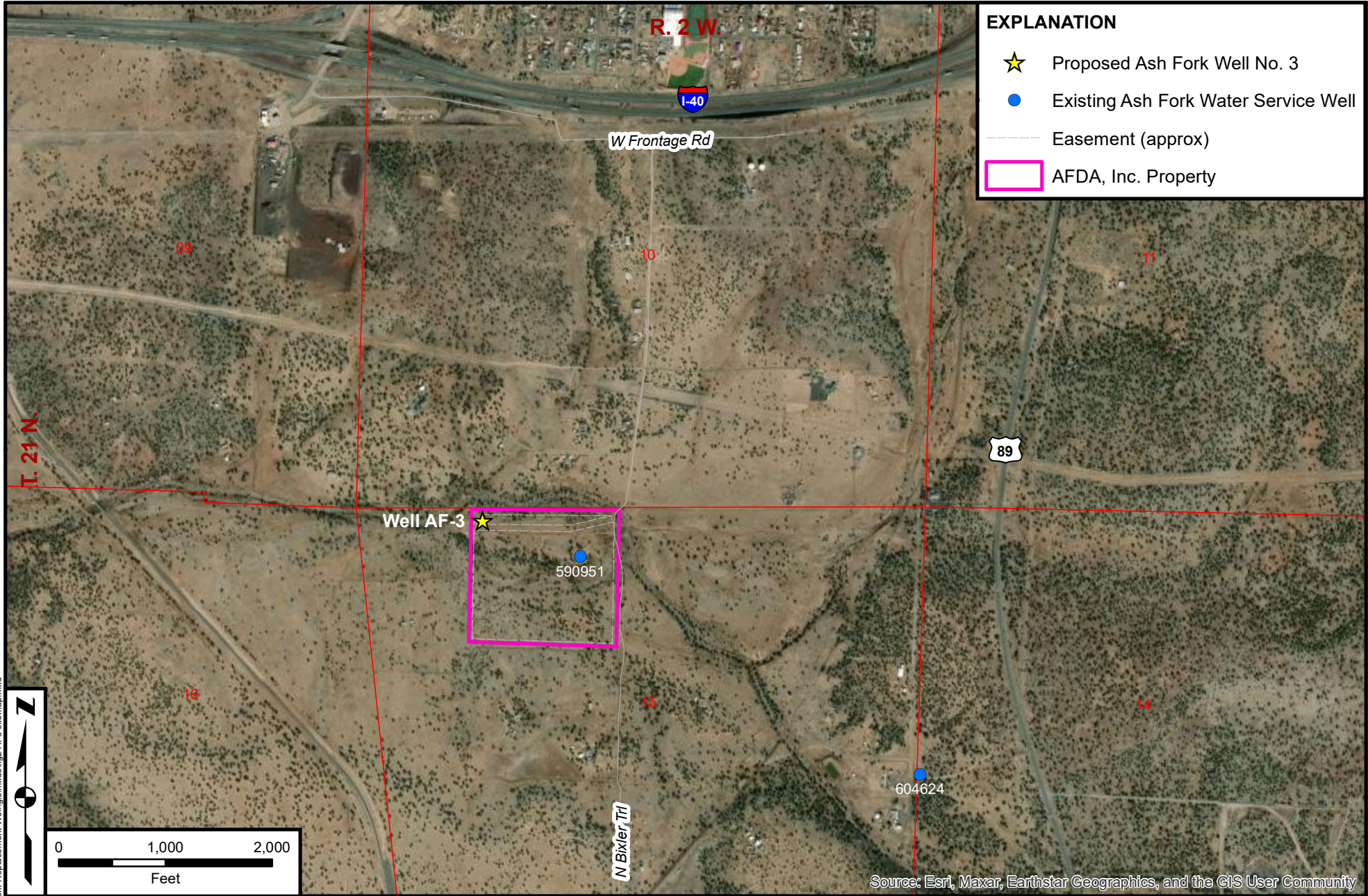
Matrix New World Engineering, PC  
 123 East Goodwin Street, Suite 200  
 Prescott, Arizona 86303

Tel: 928-771-0610  
 Fax: 602-955-7585

Certified WBE www.mnwe.com

PROJECT LOCATION MAP		
DRAWN BY: DJE	APPROVED BY:	<ACP>Project Number: 23-0178/ACP>
DATE: 06-21-2023	DATE: 06-21-2023	1 in = 6,000 ft

FIGURE NUMBER:  
1



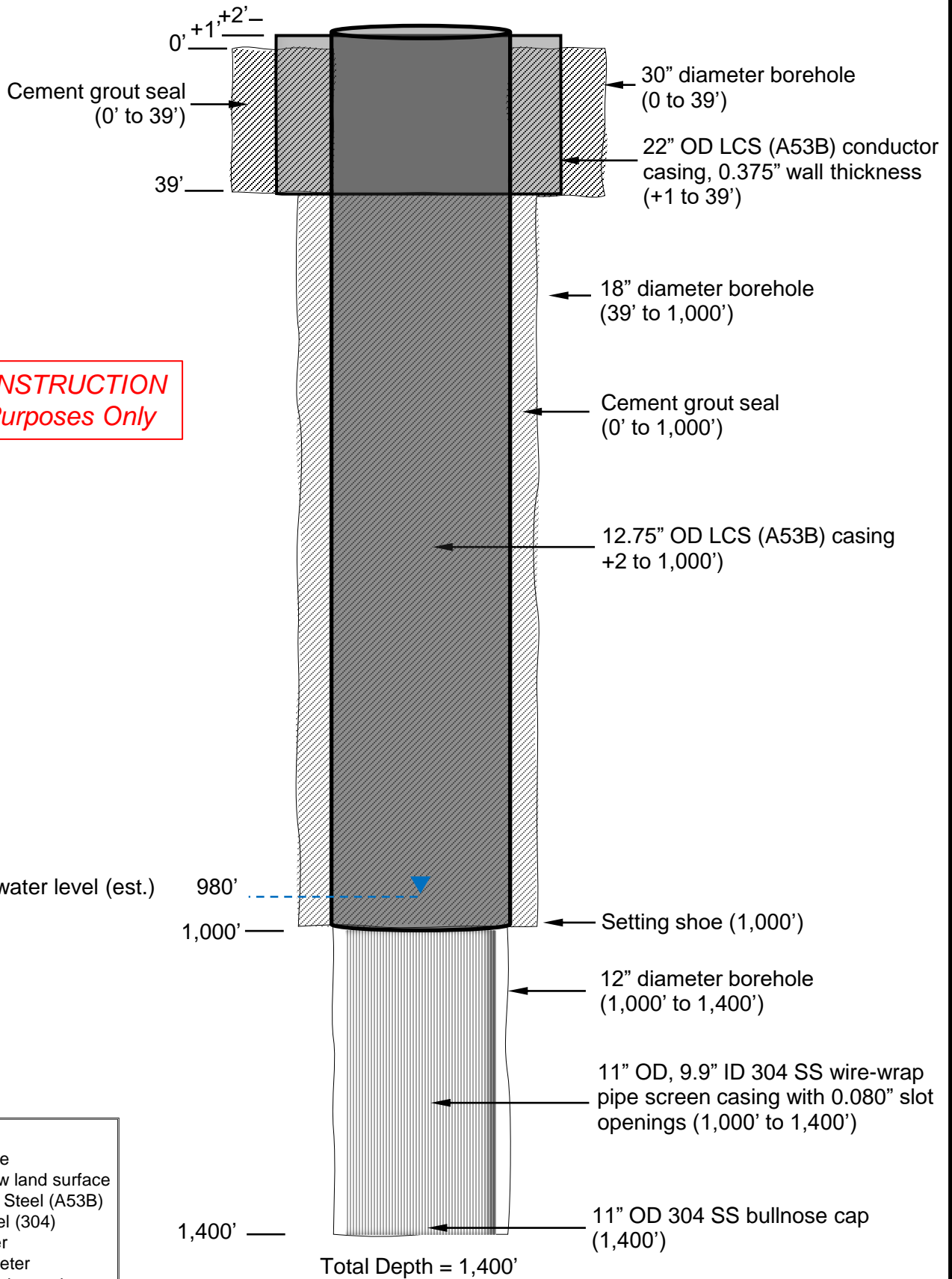
**EXPLANATION**

- ★ Proposed Ash Fork Well No. 3
- Existing Ash Fork Water Service Well
- Easement (approx)
- AFDA, Inc. Property

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

C:\mydocs\sgprj\23-0193\_Ash Fork Replacement Well\fig2\af3\_sitemap.mxd

<p><b>TECHNICAL SPECIFICATIONS</b>  <b>ASH FORK DEVELOPMENT ASSOCIATION, INC.</b>  <b>ASH FORK WELL NO. 3</b>  <b>YAVAPAI COUNTY, ARIZONA</b></p>	<p><b>MATRIX</b><b>NEWORLD</b>          Engineering Progress</p> <p><small>Matrix New World Engineering, PC          123 East Goodwin Street, Suite 200          Prescott, Arizona 86303</small></p> <p><small>Tel: 928-771-0610          Fax: 602-955-7585</small></p> <p><small>Certified WBE <a href="http://www.mnwe.com">www.mnwe.com</a></small></p>	<p><b>SITE MAP</b></p>			<p>FIGURE NUMBER:  <b>2</b></p>	
		DRAWN BY: DJE	APPROVED BY:	Project Number: 23-0193		
		DATE: 06-21-2023	DATE: 06-21-2023	1 in = 1,250 ft		



**NOT FOR CONSTRUCTION**  
*For Bidding Purposes Only*

- NOTES:
- Drawing not to scale
  - Depths in feet below land surface
  - LCS = Low Carbon Steel (A53B)
  - SS = Stainless Steel (304)
  - ID = Inside diameter
  - OD = Outside diameter
  - Centralizers at 80 ft intervals

## TABLES

**Table 1 Schedule of CONTRACTOR Deliverables**

Task	Section	Delivery Schedule	Date
Site Safety Plan	1.4.4	5 days prior to mobilization	
ADEQ NPDES permit (if necessary)	2.4	2 days prior to discharge	
Arizona 811 Notification	3.3	2 days prior to mobilization	
Certification of Downhole Equipment Decontamination	4.0	2 days prior to mobilization	
Penetration Rate Log	5.2	Daily during drilling	
Daily Driller Report	5.3	Daily during drilling	
Lithologic Log	5.4	Within 30 days of well completion	
Drilling Fluid Log	5.5	Daily during drilling	
Drilling Fluid Control Plan	6.2	2 days prior to drilling	
Surface Casing Certification	7.2.2.1	3 days prior to installation	
Surface Seal Cement Mix Design	7.2.2.2	3 days prior to placement	
Drill Cuttings Sampling Plan	7.3.1	2 days prior to drilling	
Well Casing and Screen Certification	7.4.1.1	3 days prior to installation	
Pump Test Equipment Spec Sheets	8.2	2 days prior to mobilization	

**Table 2 Bid Tab, Ash Fork Well No. 3 [B(21-02) 15BBA]**

Item No.	Description	Unit	No. of Units <sup>a</sup>	Unit Cost	Total Item Price
1	<b>Mobilization / Demobilization</b>	LS	1		
2	<b>Surface Casing Construction</b>	LS	1		
3	<b>Borehole Drilling</b>				
	A. 18-inch (minimum) upper borehole	lf	1000		
	B. 12-inch lower borehole	lf	400		
4	<b>Geophysical Logging</b>	LS	1		
5	<b>Casing Cost</b>				
	A. 12 3/4-inch OD, LCS blank well casing (A53B, 0.250-inch wall)	lf	1002		
	B. 11-inch OD (10P), wire wrap casing (304L, 0.080 slot) with setting shoe	lf	400		
6	<b>Casing Installation</b>				
	A. Intermediate blank casing	lf	1,002		
	B. Screen casing	lf	400		
7	Cement seal	cu	40		
8	<b>Pump Development and Aquifer Testing</b>				
	A. Furnish, install, and remove test pumping equipment	LS	1		
	B. Pumping tests (Development, Step-rate and Constant-rate)	hr	64		
	C. Equipment and well disinfection	LS	1		
9	<b>Video Survey</b>	LS	1		
10	<b>Lost Circulation (Contingency)</b>	hr	24		

**TOTAL** \_\_\_\_\_

**TOTAL PRICE (In Words):**

\_\_\_\_\_

\_\_\_\_\_  
 (Signed)

\_\_\_\_\_  
 (Date)

\_\_\_\_\_  
 (Company Name)

**Notes:**

The unit prices for the above payment items shall be full compensation for all labor, material, equipment, tax, bond, and insurance costs in connection therewith. Principal features of the work to be included under the various payment items will be on a linear foot (lf), hourly (hr), per cubic yard (cu), or lump sum (LS) basis, as designated. Quantities are not guaranteed. Final payment will be based on actual quantities installed; CONTRACTOR shall not be compensated for services or materials not installed. If the required quantities of the listed items are increased or decreased by Change Order, the unit prices set forth above shall apply to such increased or decreased quantities. Although Lost Circulation is not expected, this item is included as a contingency to be paid from OWNER's Project Allowance with prior written authorization.

## APPENDICES

## **APPENDIX A**

Well Driller Report, Ash Fork Well No. 2

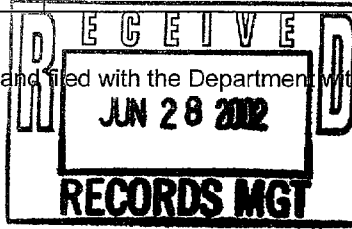




**Arizona Department of Water Resources**  
 Records Management Section  
 500 N. 3rd Street • Phoenix, Arizona 85004  
 (602) 417-2405 • (800) 352-8488  
 www.water.az.gov

**Well Driller Report  
 and  
 Well Log**

- ❖ Review instructions prior to completing form
- ❖ This report should be prepared by the driller in detail and filed with the Department within 30 days following completion of the well.



FILE NUMBER <b>8(21-2)15BAD</b>
WELL REGISTRATION NUMBER <b>55-590951</b>
PERMIT NUMBER (IF ISSUED)

\*\* PLEASE PRINT CLEARLY \*\*

SECTION 1. REGISTRY INFORMATION	
<b>Well Owner:</b>	<b>Location of Well</b>
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL <i>Eric R. Owens</i>	WELL LOCATION ADDRESS (IF ANY)
MAILING ADDRESS <i>6645 N Hwy 89</i>	TOWNSHIP (N/S) RANGE (E/W) SECTION <i>21 2 15</i>
CITY/STATE/ZIP CODE <i>Chino Valley Az. 86323</i>	160 ACRE 40 ACRE 10 ACRE <i>NW 1/4 NE 1/4 SE 1/4</i>
CONTACT PERSON NAME AND TITLE <i>Same</i>	LATITUDE LONGITUDE "N "W
TELEPHONE NUMBER <i>(928) 636-4272</i>	LAND SURFACE ELEVATION AT WELL <i>Est 5100</i> Feet Above Sea Level
FAX <i>(928) 636-1692</i>	METHOD OF LATITUDE / LONGITUDE (CHECK ONE) <input type="checkbox"/> Hand-Held <input type="checkbox"/> USGS Quad Map <input type="checkbox"/> Conventional Survey <input type="checkbox"/> GPS: <input type="checkbox"/> Survey-Grade
	COUNTY ASSESSOR'S PARCEL ID NUMBER BOOK <i>302</i> MAP <i>07</i> PARCEL <i>089</i>
	COUNTY WHERE WELL IS LOCATED <i>Yavapai</i>

SECTION 2. DRILLING AUTHORIZATION	
<b>Drilling Firm</b>	
NAME <i>Del Rio Drilling Pump Inc.</i>	
DWR LICENSE NUMBER <i>530</i>	
TELEPHONE NUMBER <i>(928) 636-4272</i>	FAX <i>(928) 636-1692</i>

SECTION 3. WELL CONSTRUCTION DETAILS		
DATE WELL CONSTRUCTION STARTED	DATE WELL CONSTRUCTION COMPLETED <i>5-20-2002</i>	IF FLOWING WELL, METHOD OF FLOW REGULATION <input type="checkbox"/> Valve <input type="checkbox"/> Other:
<b>Drill Method</b> CHECK ONE <input checked="" type="checkbox"/> Air Rotary <input type="checkbox"/> Bored or Augered <input type="checkbox"/> Cable Tool <input type="checkbox"/> Dual Rotary <input type="checkbox"/> Mud Rotary <input type="checkbox"/> Reverse Circulation <input type="checkbox"/> Driven <input type="checkbox"/> Jetted <input type="checkbox"/> Air Percussion / Odex Tubing <input type="checkbox"/> Other (please specify):	<b>Method of Well Development</b> CHECK ONE <input checked="" type="checkbox"/> Airlift <input type="checkbox"/> Bail <input type="checkbox"/> Surge Block <input type="checkbox"/> Surge Pump <input type="checkbox"/> Other (please specify):	<b>Method of Sealing at Reduction Points</b> CHECK ONE <input checked="" type="checkbox"/> None <input type="checkbox"/> Packed <input type="checkbox"/> Swedged <input type="checkbox"/> Welded <input type="checkbox"/> Other (please specify):
	<b>Water Level Information</b> STATIC WATER LEVEL <i>980</i> Feet Below Land Surface DATE MEASURED <i>3-30-2002</i>	

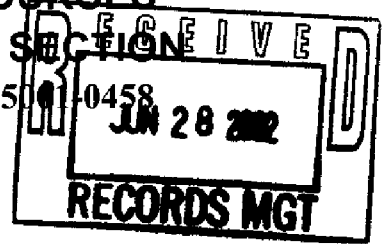
**COMPLETED JUL 05 2002**





ARIZONA DEPARTMENT OF WATER RESOURCES  
GROUNDWATER MANAGEMENT SUPPORT SECTION

MAIL TO: P. O. BOX 458 - PHOENIX ARIZONA 85001  
Phone 602-417-2470



COMPLETION REPORT

(Pump Installation Report)

- A. Per A.R.S. § 45-600.B, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
- B. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operations. For a flowing well the shut-in pressure should be measured in feet above the land surface or in pounds per square inch at the land surface.
- C. The static groundwater level should be measured in feet from the land surface immediately prior to the capacity test.
- D. The tested pumping capacity of the well in gallons per minute for a non-flowing well should be determined by measuring the discharge of the pump after continuous operation for at least 4 hours and for a flowing well be measuring the natural flow at the land surface.
- E. Items 1 and 2 are available from the Notice of Intent to Drill.
- F. Items 3 and 4 may be available from the driller.

1. **REGISTRATION NO:** 55-590951 **FILE NO:** \_\_\_\_\_

2. **LOCATION OF THE WELL:**

21 NS 2 EW 15 1/4 SE 1/4 NE 1/4 NW  
Township Range Section 10-acre 40-acre 160-acre

3. **EQUIPMENT INSTALLED:**

Kind of pump Submersible Kind of power Electric  
Turbine, Submersible, Centrifugal, etc. Electric, natural gas, gasoline, etc.  
H.P. Rating of Motor 75 HP Pumping Capacity 180+ Date Pump Installed 5-23-2002

4. **WELL TEST:**

Test pumping capacity 180+ Date Well Tested 5-25-2002  
Gallons per minute  
Method of Discharge Measurement Flo-Meter  
Weir, orifice, current meter, etc.  
Static Groundwater Level 980 ± ft. Drawdown 19 ft.  
Total Pumping Lift 980 ± ft. Drawdown \_\_\_\_\_ lbs  
(Flowing Well)

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief.

Eric Owens 6645 N. Hwy 89 Chino Valley Az 86323  
Print Well Owner's Name Address City State Zip  
Eric Owens (928) 636-4272 6-20-2002  
Signature of Well Owner Phone Number Date