DEMONSTRATION OF PHYSICAL AVAILABILITY OF GROUNDWATER CITY OF PRESCOTT YAVAPAI COUNTY, ARIZONA

PREPARED FOR:

City of Prescott
Public Works Department
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DATE:

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MATRIX PROJECT NO.:

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MATRIXNEWORLD
Engineering Progress

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A. EXECUTIVE SUMMARY

Matrix New World Engineering, Land Surveying and Landscape Architecture, PC (Matrix) has prepared this hydrogeologic study on behalf of the City of Prescott (CoP) in support of an Application for a Modification of the Designation of Assured Water Supply (DAWS). Hydrogeologic data and other information were compiled from various sources including the Arizona Department of Water Resources (ADWR), Arizona Geological Survey (AGS), United States Geological Survey (USGS), Southwest Groundwater Consultants, Inc. (SGC) [now Matrix], CoP and Matrix. This report has been completed in accordance with the 2007 ADWR guidance document entitled *Hydrologic Studies Demonstrating Physical Availability of Groundwater for Assured and Adequate Water Supply Applications.*

The long-term 100-year impact on the aquifer due to the projected groundwater pumping for the CoP was estimated using the 2021 ADWR Prescott Active Management Area (PrAMA) Groundwater Flow Model Update (2021 PrAMA Model) (Mawarura et al., 2021). The 2021 PrAMA Model simulates historic groundwater conditions from 1939 through 2019. The model has been modified and updated by Matrix for this study. The modified 2021 PrAMA Model serves as the base for the 100-year predictive model scenario to evaluate whether future pumping by CoP meets the Physical Availability requirement of the ADWR Assured Water Supply (AWS) Program.

The CoP total groundwater supply inventory of 15,194.27 acre-feet per year (AFA) was simulated to be pumped from for 100-years from eight (8) existing wells and one (1) future production well in the CoP's Chino Valley and Airport Well Fields. Artificial recharge of effluent and surface water at the Prescott Recharge Facility is simulated at 5,761 AFA for the 100-year predictive period. CoP pumping combined with another 8,108 AFA of current and committed AWS demands in the 2021 PrAMA Model domain, results in a projected maximum 100-year depth to groundwater of 549 feet below land surface (ft bls) in the CoP Airport Well Field (Well AP-2 Model Layer 2). Model results indicate that no AWS pumping wells in the model domain are caused to go dry or to have a depth to static water level exceeding 1,000 ft bls after 100 years. Based on the impact analysis presented, adequate groundwater is available from the underlying regional aquifer to meet CoP and existing AWS demands for 100 years, in accordance with the criteria for Physical Availability as established in A.A.C. R12-15-716.

B. INTRODUCTION

This hydrogeologic report was prepared to support CoP's Application for Modification of its DAWS (DWR No. 26-401501.0000). Groundwater is found principally within the Little Chino (LIC) and Upper Agua Fria (UAF) sub-basins of the PrAMA. The municipal boundary of the CoP encompasses approximately 2,700 acres in the south-central portion of the PrAMA as shown on **Figure 1**. Groundwater for CoP is pumped from wells in the LIC that are completed in the regional aquifer comprised of sedimentary and volcanic deposits. The study area for this report is the active model domain of the ADWR 2021 PrAMA Model (Mawarura et al., 2021) with an emphasis on geologic and hydrologic conditions in the LIC sub-basin.

The primary source of drinking water to CoP is groundwater that is pumped from eight (8) existing production wells installed principally in the regional volcanic aquifer. Summary of information for the CoP production wells is shown in **Table 1**. Location of the CoP production wells is shown on **Figure 2**. Five production wells comprising the Chino Valley Well Field have been in operation since the late 1940s. Recent depth to water in the Chino Valley wells ranges from 177 to 247 feet below land surface (ft bls). The CoP Airport Well Field was first established in 2008 and is comprised of three production wells. Depth to water in the Airport wells ranges from 393 to 453 ft bls. A fourth Airport well (Well AP-6) is scheduled to be installed in fiscal year 2022-23 as a part of a CoP Capital Improvement Project (CIP). Future Well AP-6 is expected to have similar production capacity as existing Well AP-5.

All existing CoP production wells in both the Chino Valley and Airport Well Fields are permitted Recovery Wells for recovery of permitted recharge at the Prescott Recharge Facility (USF Permit No. 71-519567.0002). Wells AP-2, AP-3, AP-5, and AP-6 (future) are within 1-mile radius of the USF (i.e. the Safe Harbor distance for recovery of recharged water) (**Figure 2**). Approximately 2,319 AF of effluent and 3,002 AF of surface water was delivered to the recharge basins in the year 2020. The amount of effluent available for recharge is projected to be 3,879 AFA in 20 years.

The 100-year impact of groundwater pumping for AWS demand in the PrAMA was estimated using a modified version of the 2021 PrAMA Model (Mawarura et al., 2021). A numerical groundwater flow model for the PrAMA was originally created by Corkhill and Mason (1995) with subsequent revisions by Timmons (2006), Nelson and Yunker (2014), and Mawarura et al. (2021). The ADWR 2021 PrAMA Model simulates historic groundwater conditions from 1939 through 2019 with inputs for pumping, artificial recharge, stream recharge, mountain front recharge, general head boundary conditions, and evapotranspiration. The modified 2021 PrAMA Model was used to predict groundwater conditions after 100 years of pumping the current, committed, and projected demands in the PrAMA Model domain. This report demonstrates the physical availability of groundwater to the CoP for 100 years using available hydrogeologic data in conjunction with the 2021 PrAMA groundwater flow model.

C. DEMAND DESCRIPTION

C.1 EXISTING USES

Existing uses in the PrAMA include all lots and parcels that receive water from any provider or by individual wells. Existing uses also include non-exempt agriculture, industrial, and commercial wells. Pursuant to A.R.S. 45-454, exempt wells are considered in this report to be an existing use of groundwater in the study area. Existing non-exempt and exempt registered water production wells in the PrAMA (ADWR, 2019) are shown on **Figure 3**. Wells located in the 2021 PrAMA Model domain are simulated to be pumping through 2120 (see Section F). The past effect of pumping from these wells on the regional aquifer is reflected in the recent 10-year average groundwater level decline trend of wells in the study area (see Section E.8).

C.2 ISSUED DEMANDS

Figure 4 shows the location of approved and issued ADWR assured water supply (AWS) determinations in the PrAMA. In addition to the Designation of Assured Water Supply (DAWS) for CoP, this includes projects that have been issued an Analysis of Assured Water Supply (AAWS) or a Certificate of Assured Water Supply (CAWS). Committed demand is the total groundwater pumping for a subdivision (or municipality) upon build-out. Issued AWS demands in the PrAMA are listed in **Table 2**.

C.3 APPLICATION DEMAND

Demand calculation methods are described by CoP in the Application (Part B). The sum of CoP current, committed, and projected water demands are summarized in **Chart 1**.

Chart 1 Summary of CoP Current, Committed and Projected Demands

City of Prescott Water Demand	Quantity (AFA)
Current Demand	7,613.00
Committed Demand	2,902.44
Projected Demand	1,397.00
TOTAL:	**11,912.44**

Notes: AFA = Acre feet per annum

D. WATER SUPPLY DESCRIPTION

D.1 WATER QUANTITY

The primary source of water supply to CoP is groundwater that is pumped principally from the volcanic aquifer system in the LIC sub-basin of the PrAMA. Currently, groundwater is pumped from eight (8) wells located as shown on **Figure 2** and summarized in **Table 1**. Well Driller's Reports for CoP wells are presented in **Appendix A**. Future Well AP-6 is listed in the CoP Capital Improvement Plan to be completed in fiscal year 2022-23. Depth to water in the CoP wells ranges from 177 to 453 ft bls. The average saturated thickness of the aquifer penetrated by CoP wells is 486 feet. The combined pumping capacity of the existing CoP wells is approximately 9,940 gallons per minute (gpm) (16,033 AFA) with another 2,000 gpm (3,226 AFA) expected when Well AP-6 is in service. CoP currently pumps approximately 64% of its demand from wells in the Chino Valley (CV) Well Field; the remaining 36% of demand is pumped from the Airport (AP) Well Field. Approximately 34.5% of the CoP existing groundwater supply is recovered surface water and effluent that is recovered at the AP Well Field within the AOI of the City's permitted Underground Storage Facility (USF) - Permit No. 71-519567.0002.

Direct reuse of effluent from the CoP water reclamation facility in 2020 was 1,965 AF. The remaining treated effluent was recharged to the aquifer through recharge basins located at the Prescott USF that is permitted to store up to 12,000 AFA of effluent and surface water from Granite and Willow Creeks. In 2020, approximately 2,319 AF of effluent and 3,002 AF of surface water was delivered to the recharge facility. The long-term average annual volume of surface water available for recharge and recovery is 1,925 AFA. The annual volume of effluent that is delivered to the recharge basins is projected to increase from 2,565 to 3,879 AFA in the first 20 years of the predictive period (**Table 3**). The 20-year value was used in the model simulation for the 100-year predictive period.

Methods used to calculate the 100-year CoP groundwater supply annual volumes in the LIC sub-basin are described in the Application (Part B). A summary of the supply volume is provided in **Chart 2**.

Chart 2 Summary of CoP 100-Yr Annual Groundwater Supply

Water Supply Type	Quantity (AFA)
Groundwater Allowance	9,947.34
Recovered Surface Water	1,925.00
Recovered Effluent	3,066.00
Long-term Storage Credits	255.93
TOTAL:	**15,194.27**

Notes: AFA = Acre feet per annum

D.2 WATER QUALITY

Groundwater pumped into the CoP public water system (AZ0413045) is routinely tested to ensure its compliance with drinking water quality standards of the U.S. Environmental Protection Agency (EPA) and the Arizona Department of Environmental Quality (ADEQ). Groundwater from the Chino Valley and Airport Well Fields is generally of suitable chemical quality for potable use. A Blending Plan and sorptive media are utilized to ensure naturally occurring levels of arsenic do not exceed state and federal standards. A copy of the 2020 Annual Drinking Water Quality Report is provided in **Appendix B**.

Effluent recharged at the CoP USF is regulated by ADEQ (Aquifer Protection Permits P-100353 and P-101733) and meets existing Arizona Aquifer Water Quality Standards (AWQS).

E. AQUIFER CHARACTERIZATION AND EVALUATION

The geology and hydrogeology of the study area and region have been investigated by various individuals and agencies including, but not limited to: ADWR (Corkhill and Mason, 1995; Nelson, 2002; Timmons, 2006; Nelson and Yunker, 2014); U.S. Geological Survey (Oppenheimer and Sumner, 1980; Shipman et al., 2007); Montgomery & Associates, Inc. (1998, 2020); Southwest Ground-water Consultants, Inc. (1996, 2005, and 2014); and Matrix (2019 and 2020). These investigators have discussed interpretations of depth to bedrock, the lithology and thickness of the alluvial units, aquifer characteristics of the alluvial units, basin structure, depth to groundwater, and groundwater quality. Data were also obtained from the ADWR Basic Data Section, which includes the well registry (ADWR, 2021), Well Driller Reports, and groundwater level data (ADWR, 2021a).

E.1 GEOLOGIC BACKGROUND

The CoP well fields are located within LIC sub-basin of the PrAMA **(Figure 1)**. The LIC sub-basin is generally defined by a groundwater divide that roughly parallels U.S. Highway 89A on the south, the Coyote Fault system on the east, Precambrian rock suites on the west, and the Sullivan Buttes and up-faulted Precambrian rocks on the north. The LIC sub-basin is a down-dropped series of fault blocks that have been subsequently filled with inter-bedded sedimentary and volcanic deposits. A geologic map is provided on **Figure 5** showing surficial units as mapped by DeWitt et al (2008). Three distinct subsurface units are present in the LIC sub-basin as described in the following sections.

E.1.1 Upper Alluvial Unit

The youngest deposits in the LIC sub-basin are Quaternary and Tertiary age semi-consolidated sedimentary deposits that are generally referred to as the Upper Alluvial Unit (UAU). The UAU consists of poorly-sorted alluvium comprised of sand, silt, clay, with scattered conglomerate comprised of volcanic rocks and tuff. Information from video logging and the Well Driller's Logs confirms that CoP production wells in Chino Valley Well Field penetrate approximately 260 feet of clay, below which is a pebble conglomerate to approximately 420 ft bls. In the Airport Well Field the UAU is comprised of approximately 220 feet of predominantly fine sand and silt that lies above coarse sand and gravel deposits to approximately 600 ft bls (e.g. Well AP-2). The thickness of the UAU diminishes towards Granite Mountain to the west, and to the north near Del Rio Springs. Groundwater occurs in the UAU under water table conditions. Groundwater pumping in the UAU is typically from exempt domestic and stock wells. The UAU is represented in the 2021 PrAMA Model by Layer 1 which has varied thickness throughout the model domain, ranging from 361 to 1,625 feet.

E.1.2 Lower Volcanic Unit

The Lower Volcanic Unit (LVU) is a sequence of volcanic rocks and sediments that underlies the UAU throughout much of the LIC and UAF sub-basins. The LVU consists of a thick accumulation of Tertiary age basaltic and andesitic lava flows that are inter-bedded with layers of pyroclastic and alluvial material (Corkhill and Mason, 1995). The volcanic sequence was discovered to be a prolific aquifer in the early stages of groundwater development in the LIC sub-basin. Confined aquifer conditions exist in LVU from approximately the center of the Town of Chino Valley, northward to Del Rio Springs where the piezometric surface intersects the land surface. Groundwater movement is controlled by primary fractures and along bedding planes.

Groundwater in the LVU is stored in a zone of weathered volcanic rocks (breccia or conglomerate) that is underlain by a series of basalt flows, the uppermost being typically fractured and/or having cavernous voids. The Well Driller Log for CoP Well CV-1 reports the borehole to penetrate approximately 351 feet of the LVU; well video logs at Well CV-4 and Well CV-5 confirm the LVU to be at least 260 feet thick (Matrix, 2020). The thickness of the LVU in the Airport well field is varied with only 110 feet at Well AP-2, and 537 feet at Well AP-3. The LVU is simulated in the 2021 PrAMA Model by Layer 2 and is assigned a uniform thickness of 300-feet throughout the model domain.

E.1.3 Lower Alluvial Unit

Beneath the LVU are basal alluvial deposits that Corkhill and Mason (1995) estimate to be 500 feet thick or more in some portions of the LIC sub-basin. The Log of Well for CV-1 (**Appendix A**) describes 70 feet of clay and gravel deposits beneath the LVU. Wells AP-3 and AP-5 penetrate 63 feet and 210 feet, respectively of the LAU. Wells drilled by Town of Prescott Valley in both the LIC and UAF sub-basins penetrate 50 to 170 feet of the LAU. The LAU is not represented by a model layer in the 2021 PrAMA Model.

E.2 GEOLOGIC BEDROCK

Previous geophysical surveys of the sub-basin include Oppenheimer and Sumner (1980) and Cunion (1985) whose reports include geologic interpretations of depth to bedrock. The 2006 PrAMA Model Update (Timmons and Springer) utilized geophysical well logs to better interpret the geologic unit contacts and hydrologic bedrock depth. Richard et al. (2007) interpreted depth to bedrock in the LIC and Big Chino sub-basins (**Figure 6)** from aeromagnetic and gravity data presented by Langenheim et al. (2004). Depth to bedrock in the PrAMA ranges from 0 to approximately 1,600 ft bls as shown on **Figure 6**. Geologic bedrock is generally considered to be Precambrian age rocks that are exposed to the south and west of the CoP Airport Well Field, and to the northeast and west of the CoP Chino Valley Well Field. Geologic

bedrock beneath the Chino Valley Well Field is interpreted by geophysical methods to be approximately 800 ft bls. Well Driller Logs suggest there is a bedrock high (buried ridge) that is 470 to 500 ft bls that trends westwardly from [B(15-02) 04] to Table Mountain. This area is simulated in the 2021 PrAMA Model by inactive model cells in Layer 1, Layer 2, or both.

Well 55-588619 [B(15-02) 22AAB] located approximately 2-miles northwest of the CoP Airport Well Field reportedly penetrates bedrock (granite) at 1,190 ft bls. Well 55-587403 [B(15-01) 08DAA] located approximately 2-miles northeast of Well AP-5 reportedly penetrated granite bedrock at 820 ft bls. Drilling at Well AP-3 to 1,100 ft bls confirms depth to bedrock at this location is 291 feet deeper than is simulated in the 2021 PrAMA Model in the respective model cell.

E.3 GEOLOGIC STRUCTURE

The LIC sub-basin is generally described as a northwest to southeast trending structural basin. Mapped or inferred faults in the LIC sub-basin are shown on **Figure 5** and can generally be described as basin bounding faults trending northwest to southeast. Impermeable boundary conditions are established in the 2021 PrAMA Model in areas of exposed, unsaturated hard rock. Borehole logs of wells on the northern boundary of the LIC sub-basin describe a thin veneer of alluvium underlain, typically, by unsaturated Tertiary volcanic rocks unconformably on Precambrian schist (SGC, 1996). Interpretation of this stratigraphic section leads to the conclusion that the Del Rio Fault predates the deposition of the lower alluvial unit, and that the Paleozoic and Precambrian units are down faulted in the LIC sub-basin as shown on **Figure 7**. Tertiary volcanic eruptions deposited the volcanic sequence over the older up-thrown block, and onto the lower alluvial units in the LIC sub-basin. Continued or renewed movement along the Del Rio Fault, and other basin-bounding faults, provided the depositional environment for the UAU.

Faulting (and secondary fractures) are responsible for high permeability in the LVU where wells have a high production capacity. Wells not penetrating these features have relatively low yields. An example of this is CoP Well AP-3 that has a smaller estimated transmissivity (fewer fractures) than Well AP-2 despite its having nearly 400-feet greater thickness of LVU rocks. Similarly, CoP Well AP-5 penetrates approximately the same thickness of LVU as Well AP-3 yet has an aquifer transmissivity (more fractures) nearly 40-times higher (**Table 1** and Section E.7).

E.4 GEOLOGIC MAPS AND CROSS-SECTIONS

A regional geologic map of the study area is provided on **Figure 5**. A south to north trending cross-section through the LIC sub-basin is provided on **Figure 7**. The location of the cross-section is shown on **Figures 5** and **6**. The cross-section begins at CoP exploration borehole 55-920497 [B(14-01) 06ADC] and runs northward through the CoP Airport Well Field to the Chino Valley Well Field, and ends past the northern

boundary of PrAMA Model domain at GWSI Index Well 55-606020 [B(17-02) 22ABB]. Lithologic materials described in Well Driller Logs and Geologist Logs for these wells are assigned to regional formations that are mapped and described by DeWitt et al (2008).

Figure 7 shows that 2021 PrAMA Model Layer 1 appears to match closely with actual thickness of the UAU, with the exception of the area between Well 55-530642 [B(15-02) 03DAA] and Well 55-628072 [B(16-02) 28DDC]. The depth and thickness of volcanic deposits comprising the LVU and simulated by Layer 2 does not match as closely to actual unit thicknesses as shown by area well logs.

E.5 AQUIFER TESTS

Data and results of aquifer testing has previously been reported for CoP Wells CV-2, CV-3, and CV-4 (SGC, 1996). More recent aquifer tests have been conducted at CoP Wells AP-2, AP-3, AP-5, and CV-5. Pumping rates during testing of CoP wells range from 780 to 3,168 gpm. Aquifer testing data for CoP wells is provided in **Appendix C**. Specific capacity from these tests was used to estimate transmissivity by applying the empirical equations of Driscoll (1996) for unconfined and confined aquifers, respectively. The Cooper-Jacob (1946) straight-line method and Theis Recovery Method (1935) IN Kruseman and DeRidder (1990) was also used for estimating transmissivity from plots of the drawdown and recovery data, respectfully, and generally results in a higher value than the Driscoll method. Results of aquifer testing at CoP production wells is summarized in **Table 1**.

The 2021 PrAMA Model is constructed and calibrated from estimations of unit thickness, hydraulic conductivity, and storage coefficient for each of the half-mile sided grid cells in the model domain. The horizontal hydraulic conductivity of Layer 1 (simulating the UAU) is generally less than 1 feet per day (ft/day) but increases up to 50 ft/day along major stream channels. The horizontal hydraulic conductivity of Layer 2 (simulating the LVU) generally ranges from 0.589 to 5 ft/day on basin margins and in the UAF sub-basin. In the central and north portions of the LIC sub-basin the horizontal hydraulic conductivity of Layer 2 ranges from 100 to 325 ft/day. Specific yield of Layer 1 in the LIC sub-basin is generally 7.45%; in Layer 2 it is generally 15%. Specific yield in both layers may be 19-20% along major stream channels in the southern portion of the UAF sub-basin.

Comparison of aquifer parameters used in the 2021 PrAMA Model with results of aquifer testing at CoP wells shows that the model generally simulates higher total transmissivity in the Chino Valley Well Field, and lower total transmissivity in the Airport Well Field.

E.6 AQUIFER RECHARGE / DISCHARGE

Recharge to the regional aquifers occurs at mountain fronts, and along perennial and ephemeral stream beds (Corkhill et al., 1993). Artificial recharge has historically occurred at three permitted underground storage facilities (USFs) in the PrAMA that are operated by CoP, Town of Prescott Valley (ToPV), and Town of Chino Valley (ToCV), respectively. Details of recharge, discharge, under-flow and base-flow are published for the 2021 PrAMA Model (Mawarura et al, 2021). Simulated recharge inputs for the 100-year predictive period in the 2021 PrAMA Model are described in **Appendix D**. Model inputs to simulate recharge of effluent and surface water at the CoP USF are discussed in Section F.

E.7 GROUNDWATER LEVELS

A map of the 2019-20 groundwater surface elevations in the LIC area that was prepared from reported water levels at CoP wells and others in the GWSI database (ADWR, 2021a) is presented on **Figure 8**. Groundwater flow direction in the Chino Valley Well Field, and the LIC sub-basin in general, is towards the north-northwest. Groundwater flow direction in the Airport Well Field is predominantly towards the east-northeast. Depth to water in the Chino Valley Well Field ranges from 177 to 247 ft bls; depth to water in the Airport Well Field ranges from 393 to 453 ft bls. The groundwater surface elevation in the Chino Valley well field is approximately 4,485 feet above mean sea level (ft msl); groundwater surface elevation at the Airport Well Field is approximately 4,550 ft msl. Recharge of effluent and surface water at the Prescott Recharge Facility results in static water levels in the UAU being approximately 182 ft bls; depth to static water level in the LVU beneath the USF is approximately 398 ft bls [B(15-01) 19DCD2].

E.8 CHANGES IN WATER LEVELS

Historic groundwater level data has been collected at numerous CoP production wells and other monitor wells in the LIC sub-basin. Location of several selected GWSI Index Wells (ADWR, 2021a) near the Chino Valley and Airport Well Fields are shown on **Figure 8**. Hydrographs of these GWSI wells near the Chino Valley Well Field are presented on **Figure 9**; hydrographs of GWSI wells near the Airport Well Field are presented on **Figure 10**.

Review **Figure 9** shows that groundwater levels near the Chino Valley Well Field have generally declined for the period of record. For the last 10 years the annual decline rate of GWSI wells near the Chino Valley Well Field ranges 0.8 to 1.13 feet per year (ft/yr). One exception is well [B(16-02) 03DDC4] that is north of the Chino Valley wells approximately 1.5 miles and has a rising water level trend over the last 10-years of 0.25 ft/yr.

As shown on **Figure 10**, the water level trend of GWSI wells near the Airport Well Field over the last 10-years ranges from a decline of 1.13 ft/yr to a rise of 2.0 ft/yr. Generally, wells screened in the UAU appear to have a rising trend likely attributed recharge of effluent and surface water at the Prescott Recharge Facility such as that seen at well [B(15-01) 19DCD1]. Rising water level of 0.33 ft/yr is observed at well [B(15-01) 22AAB PZ1] that is located approximately 3-miles west-northwest of the CoP USF. This well reportedly penetrated the full thickness of the UAU at 1,190 ft and did not encounter the LVU. Conversely, the 10-year average water level decline rate of 0.26 to 1.13 ft/yr seen at the other GWSI wells near the Airport Well Field is representative of conditions in the LVU.

F. IMPACT ANALYSIS

F.1 MODELING APPROACH

The ADWR 2021 PrAMA Groundwater Flow Model (Mawarura et al, 2021) is a model update of the ADWR 2014 PrAMA Model (Nelson and Yunker, 2014). The ADWR 2021 PrAMA Model has been modified by Matrix, as discussed below, to simulate future groundwater conditions in compliance with the Physical Availability requirement of the ADWR Assured Water Supply Program.

F.2 NUMERICAL MODEL

The 2021 ADWR PrAMA Model simulates pre-development conditions (pre-1940) and transient groundwater conditions for November 1939 through October 2019. Reported well pumping rates and recharge volumes for Underground Storage Facilities (USFs) were simulated through 2019. Matrix modified the ADWR 2021 PrAMA Model, repeating 2019 pumping and recharge for 2020 as a catchup year, then adding all existing committed demands for the 100-year predictive period of 2021 through 2120. The modified model is hereby referred to as the 2021 PrAMA AWS Model, which was used as a base model for this study. A detailed explanation of the 100-year AWS model construction is provided in **Appendix D**.

Model simulations were conducted with MODFLOW-2005 version 1.12.00 (Harbaugh et al., 2005) using a command line prompt. Model data prepared for both inputs and output analysis were generated using Groundwater Vistas, ArcMap 10.5.1 (ESRI, 2017), and text editors. The MODFLOW input and output files for the CoP application are provided in **Appendix E**.

F.2.1 Applicability of Existing Model

The 2021 PrAMA AWS Model is determined to be the best tool available for evaluating groundwater resources in the sub-basin. The 2021 PrAMA AWS Model includes the following:

- Transient model period from November 1939 through October 2019
- Reported pumping and artificial recharge through 2019
- Historic simulated conditions for stream recharge, mountain front recharge, general head boundary conditions, and evapotranspiration

Reported 2019 pumping and recharge conditions were repeated for 2020 as a catchup year. Matrix then prepared the 100-year pumping scenario that simulates conditions through October 2120. Beginning in November 2020 (i.e. representing 2021), inputs of recharge, general head boundary conditions in the

north, evapotranspiration, and stream flows were extended (repeated) for the 100-year predictive period. Documentation of modifications and updates to the model are provided in **Appendix D**.

F.2.2 Model Discretization

The model grid consists of 48 rows, 44 columns, and two layers. The grid cell size is 2,640 feet by 2,640 feet and are oriented for simple conversion to the Universal Transverse Mercator (UTM) coordinate system using the 1983 North American High Accuracy Reference Network Datum (NAD 83 Harn). The model origin has a NAD83 Harn UTM Easting of 1168475.97 feet and Northing of 12522210.55 feet. The model layers are constructed to represent the two primary local aquifers described as the UAU and LVU, respectively.

F.2.3 Time Discretization

The 2021 PrAMA AWS Model simulates groundwater conditions from November 1939 through October 2120. A summary of the model stress period set up is provided in **Chart 3**.

Chart 3 Simulated Model Time

Time Period	Stress Period	Period Length (days)	No. Time Steps	Time Step Multiplier	Years Represented
Historical	1 – 160	155 and 210	10 per stress period	1.2	Nov 1939 thru Oct 2019
Catch-Up	161 – 162	155 and 210	10 per stress period	1.2	Nov 2019 thru Oct 2020
Predictive	163 – 362	155 and 210	10 per stress period	1.2	Nov 2020 thru Oct 2120

The historical period in the model represents November 1939 through October 2019 (80 years). The model is a seasonal model that includes two stress periods per year: a 155-day winter “season” from November through March and a 210-day summer “season” from April through October. The model was extended 101 years (November 2020 through October 2120) by adding 202 additional stress periods, thus maintaining the seasonal fluctuations in model inputs. Even though the model was extended for 101 years, the City demand was applied for the period November 2020 through October 2120 to simulate pumping for 100 years (stress periods 163 through 362).

F.2.3.1 Pumping

Exempt and non-exempt wells in the model domain are those registered through 2019. There are a total of 6,916 exempt wells, and 377 non-exempt wells in the model. Exempt wells were pumped at constant

withdrawal rate of 0.5 acre-feet per year per well. Actual reported pumping for non-exempt wells from the ROGR database was included in the model through 2019. MODFLOW WEL pumping package was used to assign wells to model Layer 1 and Layer 2 according to well depth. The WEL file is annotated with ADWR registration number and well owner name for each pumping well in the projected 100-year time period. Wells that simulate committed demands are noted in the remarks by "AWS".

For the 100-year committed demand projection period, groundwater withdrawal from the exempt and non-exempt, non-AWS wells was simulated using reported 2019 pumping rates. The 100-year pumping rates at AWS pumping wells were assigned to match committed demands listed in **Table 2**. The existing CoP groundwater allowance simulated in the 100-year predictive period of the base model is 9,466.02 AFA. All existing committed demands were simulated for the period 2021 through 2120 at the full permitted withdrawal rate. Not all committed demand pumping was assigned to a specific registered well. For committed demands that were not tied to a reported well or well owner, a simulated pumping well was added on the subject property. Details regarding well placements that differ from previously approved AWS application using the 2014 version of the PrAMA model are described in **Appendix D**.

One AWS determination is excluded from the 2021 PrAMA Model: Mingus Meadows Estates (DWR No. 28-500006.0000). The Analysis of Assured Water Supply (AAWS) for Mingus Meadows Estates was issued in 2006 and expired in 2016. An Application for an Extension of the AAWS was not submitted to ADWR, and aerial imagery confirms the lands remain undeveloped.

F.2.3.2 Recharge

The 2021 PrAMA AWS Model includes historic simulated conditions for stream recharge, mountain front recharge, general head boundary conditions, and evapotranspiration that are repeated for the 100-year projection period. Reported volumes of artificial recharge at USFs operated by the CoP, ToCV and ToPV are included through 2019 and repeated in 2020. During the 100-year projection period, artificial recharge at ToCV and ToPV are simulated at 0 AFA, respectively. Total surface water and effluent recharge by CoP at the Prescott Recharge Facility is simulated at the 20-year projected volume of 5,761 AFA for the 100-year predictive period. The 20-year ramp up of recharge is provided in **Table 3**. A detailed explanation of the 100-year AWS model construction is provided in **Appendix D**.

F.2.4 City of Prescott Groundwater Inventory

The total groundwater supply inventory of CoP in the LIC sub-basin is 15,194.27 AFA that includes 5,246.93 AFA of stored effluent, surface water, and long-term storage credits (**Chart 2**). The remaining groundwater supply of 9,947.34 AFA is 481.32 AFA more than the CoP's existing groundwater allowance (9,466.02 AFA). The location of CoP pumping wells is shown on **Figure 2**. Approximately 64% of its

groundwater supply is simulated to be pumped from wells in the Chino Valley Well Field (9,724.33 AFA); the remaining 36% of demand is simulated to be withdrawn from the Airport Well Field (5,469.94 AFA) at the pumping rates shown in **Table 4**.

Total simulated demand was applied at the start of the 100-year predictive period. Since actual demand for the CoP will take at least 20-years to develop, this methodology results in an overestimate of pumping withdrawal on the aquifer and associated impact over the 100-year period.

F.3 MODEL SIMULATION RESULTS

The 2021 PrAMA AWS Model, as modified by Matrix, was used to simulate pumping by CoP of its estimated committed and projected total groundwater supply (15,194.27 AFA) for the period 2021 through 2120. This volume corresponds to a continuous pumping rate of 9,420 gpm for 100-years that is simulated to be withdrawn from nine (9) CoP production wells at the pumping rates shown in **Table 4**. Due to discretization of the model, the pumping well is centered in the corresponding model cell. MODFLOW input and output files for the analysis are provided in **Appendix E** (Cloud sharefile and USB drive).

The model simulation results are shown on **Figures 11** through **14**. The 100-year drawdown projection of is shown on **Figure 11**. A map of the projected groundwater level elevations after 100-years is shown on **Figure 12**. The projected depth to static water level after 100-years is shown on **Figure 13**, and the projected saturated aquifer thickness is shown on **Figure 14**.

After 100-years of pumping the total groundwater supply of CoP in the LIC sub-basin of the PrAMA, plus withdrawal of other existing AWS demands shown in **Table 2**, the deepest simulated static water level at any of the CoP wells is 549 ft bls (Well AP-2). Results of the model simulation shows that model cells containing AWS pumping wells remain saturated and have a depth to water that is less than 1,000 ft bls.

G. CONCLUSIONS

Based on the preceding information and calculations, Matrix has made the following conclusions.

1. The regional aquifer contains adequate groundwater to meet the simulated CoP demand, and the total demand of all other issued AWS determinations in the PrAMA, for the next 100 years.

2. The 100-year depth-to-static water level in the CoP wells is less than 1,000 ft bls as established for water providers in the PrAMA

3. Model simulated pumping of the total CoP groundwater supply for 100-years does not cause other AWS pumping wells to go dry or to have a depth to static water level that exceeds 1,000 ft bls.

4. CoP proposed withdrawal of groundwater meets the criteria for Physical Availability as established in A.A.C. R12-15-716.

H. REFERENCES

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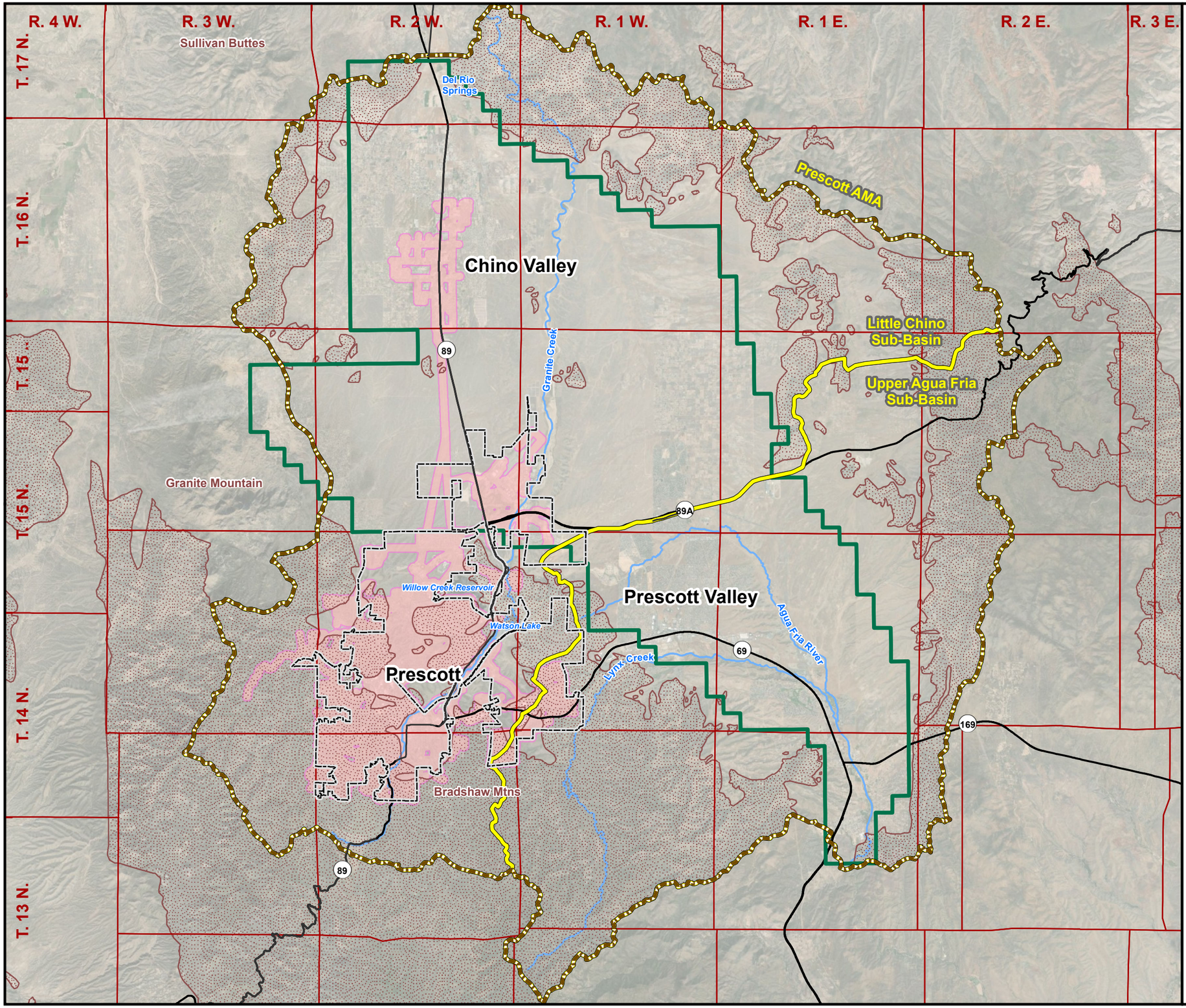
FIGURES



EXPLANATION

- City of Prescott
- City of Prescott Service Area
- Prescott AMA
- Sub-Basin Boundary
- Active Model Boundary
- Township
- Hardrock Outcrop
- Stream (ephemeral)

N

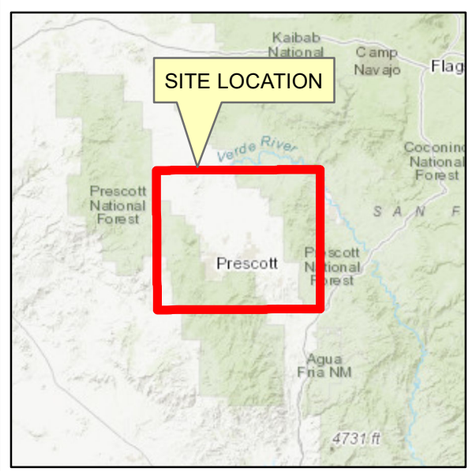
0 1 2 3 4 5

Miles

Notes

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri



LOCATION MAP

PROJECT NUMBER: 20-1132

APPROVED BY: MS

DATE: 12/15/2021

DRAWN BY: JH

DATE: 12/15/2021

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MODIFICATION OF DESIGNATION OF ASSURED WATER SUPPLY CITY OF PRESCOTT YAVAPAI COUNTY, ARIZONA

FIGURE NUMBER:

1

S:\MyDocs\SGCPRJ\2020\20-1132 Prescott DAWS\GIS\ReportMXDs\Figure1_Regional_Location_Map.mxd

R. 3 W.
R. 2 W.
R. 1 W.
R. 1 E.
T. 17 N.
T. 16 N.
T. 15 N.
T. 14 N.
CHINO VALLEY RECHARGE FACILITY
CV 4
CV 5
CV 3
CV 2
CV 1
Chino Valley
AP 5
AP 6 (future)
AP 3
AP 2
CITY OF PRESCOTT RECHARGE FACILITY
Prescott AMA
Little Chino Sub-Basin
Upper Agua Fria Sub-Basin
PRESCOTT VALLEY RECHARGE FACILITY
Prescott Valley
Granite Creek
Agua Fria River
Willow Creek Reservoir
LITTLE CHINO VALLEY
LONESOME VALLEY
JUNIPER
WILDCAT DRAW
YAEGER CANYON
PEAVINE GULCH
Embry Riddle Aero Univ Prescott
Pioneer Park
Antelope Hills Golf Course
Prescott Love Field
7613 ft
6306 ft
89
89A

EXPLANATION

- City of Prescott Production Well
- Prescott AMA
- Sub-Basin Boundary
- City of Prescott Recharge Facility
- Chino Valley Recharge Facility
- Prescott Valley Recharge Facility
- 1-Mile Safe Harbor
- Active Model Boundary
- Township
- Section
- Stream (ephemeral)

0 1 2 3
Miles

Notes
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, ADWR

CITY OF PRESCOTT
WELL FIELDS MAP

PROJECT NUMBER: 20-1132
APPROVED BY: WS
DATE: 12/15/2021
DRAWN BY: JH
DATE: 12/15/2021

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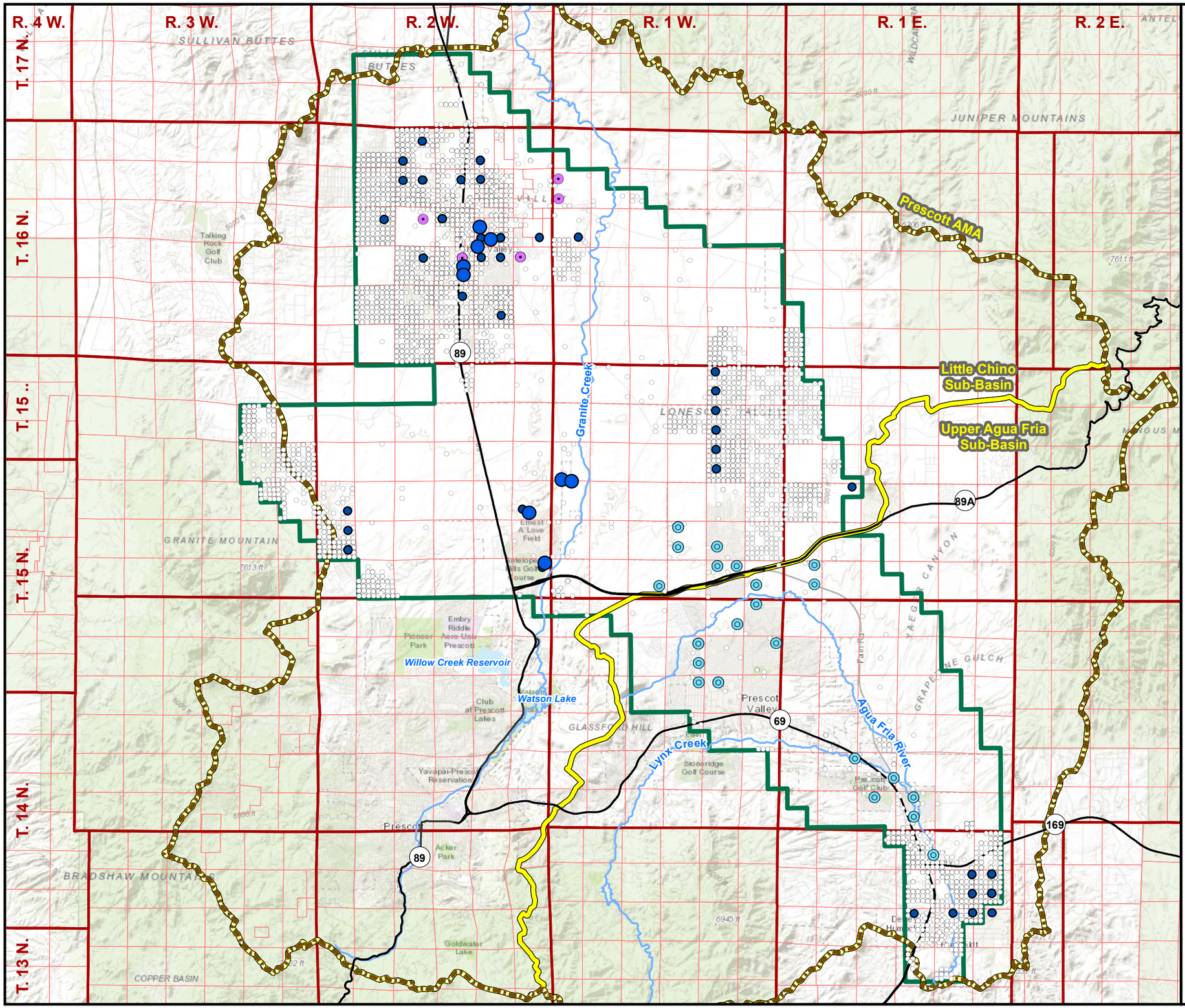
YAVAPAI COUNTY, ARIZONA

FIGURE NUMBER:
2

S:\MyDocs\SGCPRJ\2020\20-1132 Prescott DAWS\GIS\ReportMXDs\Figure2_City_of_Prescott_Well_Fields.mxd



EXPLANATION

- City of Prescott Well
- Town of Chino Valley Well
- Town of Prescott Valley Well
  Simulated Pumping Well
- Simulated AWS Well
- Exempt Well
- Stream (ephemeral)
- Prescott AMA
- Sub-Basin Boundary
- Active Model Boundary
- Township
- Section

N

0 1 2 3 4 5
Miles

Notes
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WELLS IN THE PRAMA MODEL

DRAWN BY: JH
DATE: 12/15/2021

APPROVED BY: WS
DATE: 12/15/2021

PROJECT NUMBER: 20-1132

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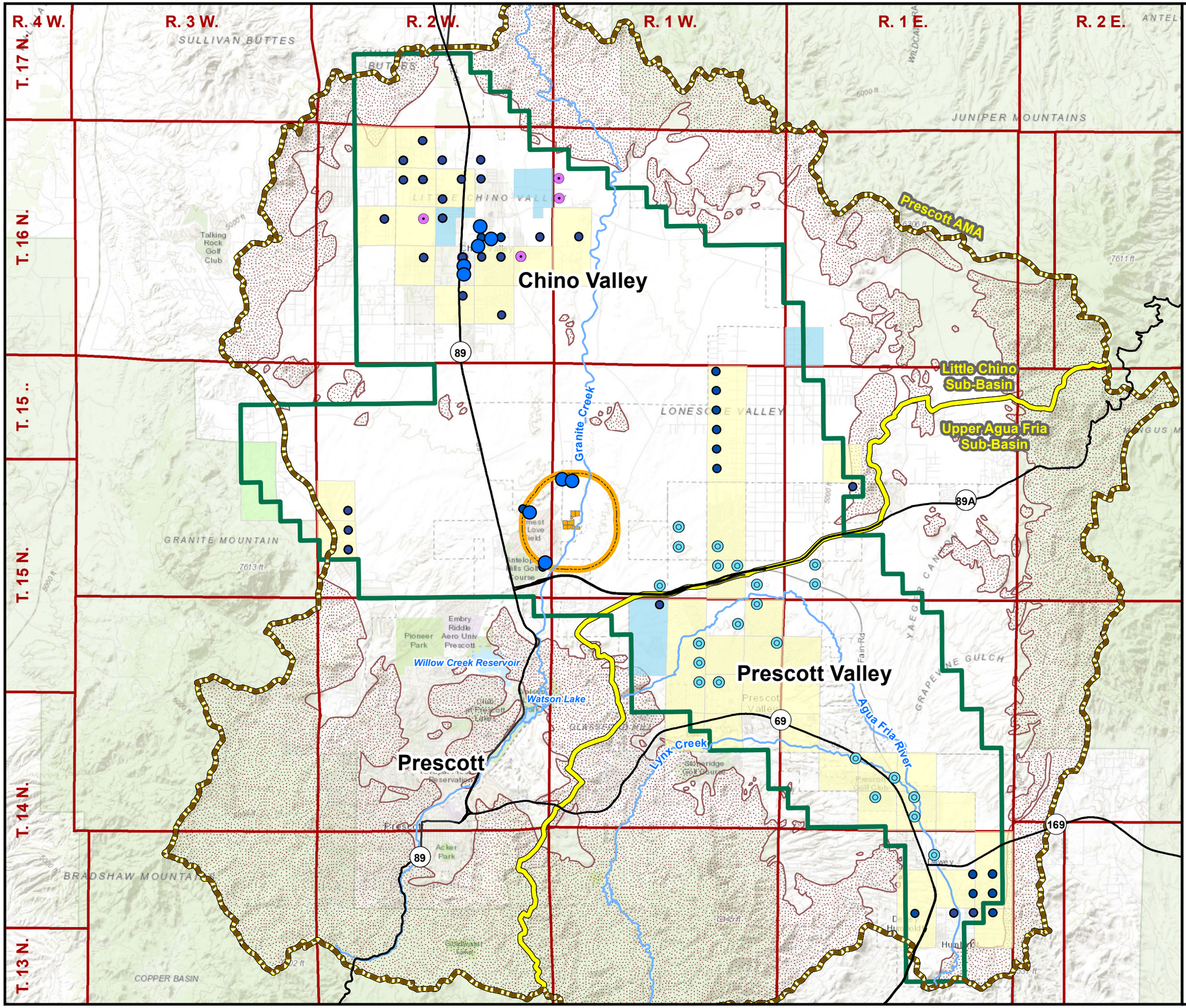
MODIFICATION OF DESIGNATION OF ASSURED WATER SUPPLY
CITY OF PRESCOTT
YAVAPAI COUNTY, ARIZONA

FIGURE NUMBER:
3

S:\MyDocs\SGCPRJ\2020\20-1132 Prescott DAWS\GIS\ReportMXDs\Figure3_Existing_Wells_Map.mxd



EXPLANATION

- City of Prescott Well
- Town of Chino Valley Well
- Town of Prescott Valley Well
- Simulated Pumping Well for Issued or Pending AWS
- Stream (ephemeral)
- Prescott AMA
- Active Model Boundary
- Sub-Basin Boundary
- 1-Mile Safe Harbor
- City of Prescott Recharge Facility
- Township
- Hardrock Outcrop

ADWR Issued Assured Water Supply Determination

- Certificate of Assured Water Supply
- Analysis of Assured Water Supply
- Designation of Adequate Water Supply

N

0 1 2 3 4 5
Miles

Notes
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, ADWR

ISSUED ASSURED WATER SUPPLY DETERMINATIONS MAP

PROJECT NUMBER: 20-1132

APPROVED BY: WS
DATE: 12/15/2021

DRAWN BY:
DATE: 12/15/2021

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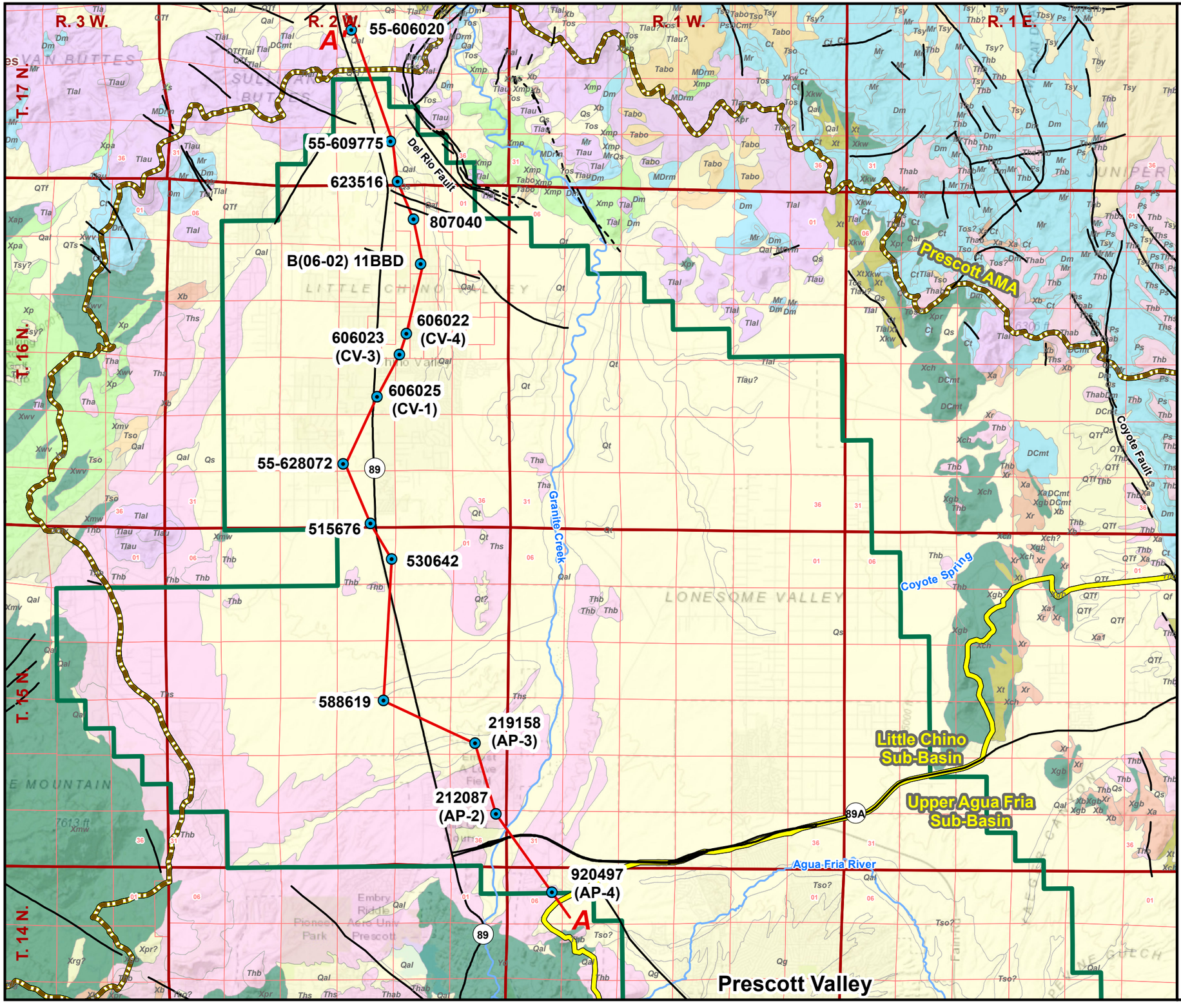
CITY OF PRESCOTT
YAVAPAI COUNTY, ARIZONA

FIGURE NUMBER:
4

S:\MyDocs\SGCPRJ\2020\20-1132 Prescott DAWS\GIS\ReportMXDs\Figure4_Location_of_Moved_AWS_Wells.mxd



EXPLANATION

- Well Identified on Geologic Cross Section
- Faults (DeWitt, 2008; Gootee, 2015)
- Cross Section Line
- Stream (ephemeral)
- Prescott
- Sub-Basin Boundary
- Active Model Boundary
- Township
- Section

Generalized Rock Formations

- Younger alluvium and fanglomerate
- Younger volcanic and sedimentary rocks
- Older volcanic and sedimentary rocks
- Hickey Formation
- Lati-andesite of Sullivan Buttes and Santa Maria Mountains
- Paleozoic sedimentary rocks
- Metasedimentary rocks
- Metatuffaceous, chemically precipitated, and gneissic rocks
- Metavolcanic rocks of approximately known composition
- Metavolcanic rocks of known chemical composition
- Intrusive rocks

N

0 1 2 3
Miles

Notes
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

SURFICIAL GEOLOGY

PROJECT NUMBER: 20-1132

APPROVED BY: WS
DATE: 12/15/2021

DRAWN BY:
DATE: 12/15/2021

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FIGURE NUMBER:
5

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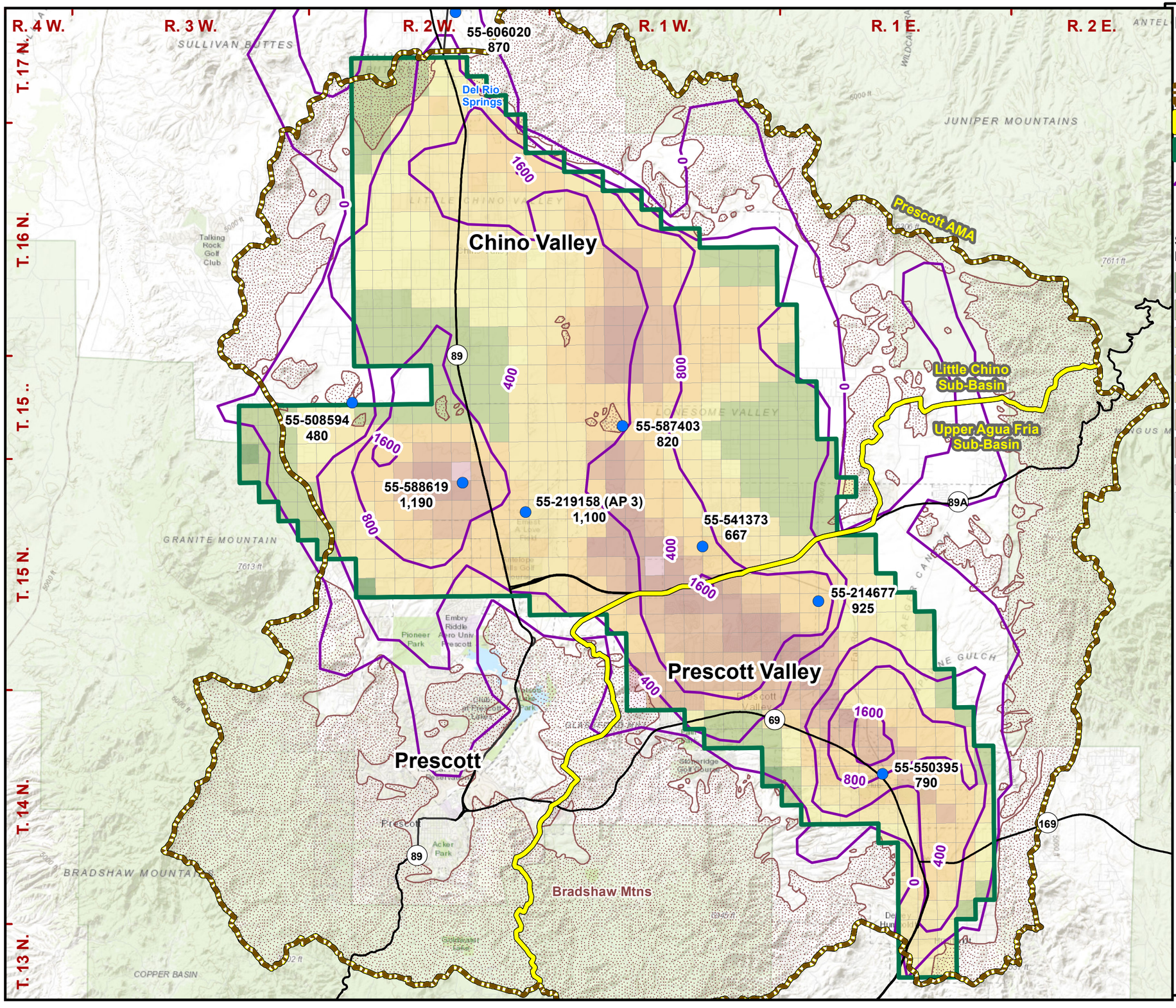

EXPLANATION

- Registered Well Showing Depth to Bedrock (ft bls)
- Prescott AMA
- Sub-Basin Boundary
- Active Model Boundary
- Depth to Bedrock Contour (ft bls) (Derived from Richard et.al., 2007)
- Hardrock Outcrop

Sedimentary Thickness in Model (feet)

- 0 - 200
- 200 - 400
- 400 - 600
- 600 - 800
- 800 - 1,000
- 1,000 - 1,200
- 1,200 - 1,400
- 1,400 - 1,600
- 1,600 - 1,800

N

0 1 2 3 4 5
Miles

Notes
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, AZGS, Freihoefer et al. (2009)
DTB - Depth to Bedrock

DEPTH TO BEDROCK

PROJECT NUMBER: 20-1132

APPROVED BY: WS
DATE: 12/15/2021

DRAWN BY: JT
DATE: 12/15/2021

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MODIFICATION OF DESIGNATION OF ASSURED WATER SUPPLY
CITY OF PRESCOTT
YAVAPAI COUNTY, ARIZONA

FIGURE NUMBER:
6

S:\MyDocs\SGCPRJ\2020\20-1132 Prescott DAWS\GIS\ReportMXDs\Figure6_Depth_To_Bedrock_Map.mxd

A SOUTH

A' NORTH

55-920497 (CoP AP-4)
55-212087 (CoP AP-2)
55-219158 (CoP AP-3)
55-588619 (ADWR Well #3)
55-530642
KRIEGER 667 FT (55-628072)
55-606025 (CoP CV-1)
55-606023 (CoP CV-3)
55-606022 (CoP CV-4)
KRIEGER 644 FT (B[16-02] 11BBD)
55-807040
KRIEGER 710 FT (55-623516)
MW-4 (55-609775)
NORTHERN BOUNDARY PRESCOTT AMA MODEL
CITY OF PRESCOTT (55-606020)

ELEVATION (feet above mean sea level)

5,200 5,100 5,000 4,900 4,800 4,700 4,600 4,500 4,400 4,300 4,200 4,100 4,000 3,900 3,800 3,700 3,600 3,500 3,400 3,300 3,200 3,100 3,000 2,900 2,800 2,700 2,600

MODEL LAYER 1
MODEL LAYER 2
MODEL LAYER 1
MODEL LAYER 2

Qs
Thb
Ths
Thb
Ths
Tmu/Tbo
Buried Volcanic Centers
Ths
QTs
Tby
Tos
Tos
Dm
Tos
Dm
DCmt
DCmt
DCmt
X
X
X
X

Depth to Bedrock from Richard et al., 2007

EXPLANATION

- Well
- Water Surface (2019)
- Unit Contact
- Fault
- Model Layer Bottom

Geologic Unit

- Qs - Sediment (Holocene and Pleistocene)
- Ths - Sedimentary Rocks
- QTs - Early Pleistocene to Late Miocene Basin Deposits
- Tby - Pliocene to Late Miocene Basaltic Rocks
- Thb - Tertiary Volcanic rocks, undiff.
- Tmu - Tertiary Volcanic rocks, undiff.
- Tos - Sedimentary rocks (Miocene and Oligocene)
- Dm - Martin Formation
- DCmt - Undifferentiated Martin and Tapeats Sandstone
- X - Bedrock (Precambrian)

NOTES:
- Cross section depicted on Figure 5
VERTICAL SCALE: 1" = 300'
HORIZONTAL SCALE: 1" = 7000'

GEOLOGIC CROSS SECTION

PROJECT NUMBER: 20-1132

DRAWN BY: JH
DATE: 12/15/2021

APPROVED BY: DE
DATE: 12/15/2021

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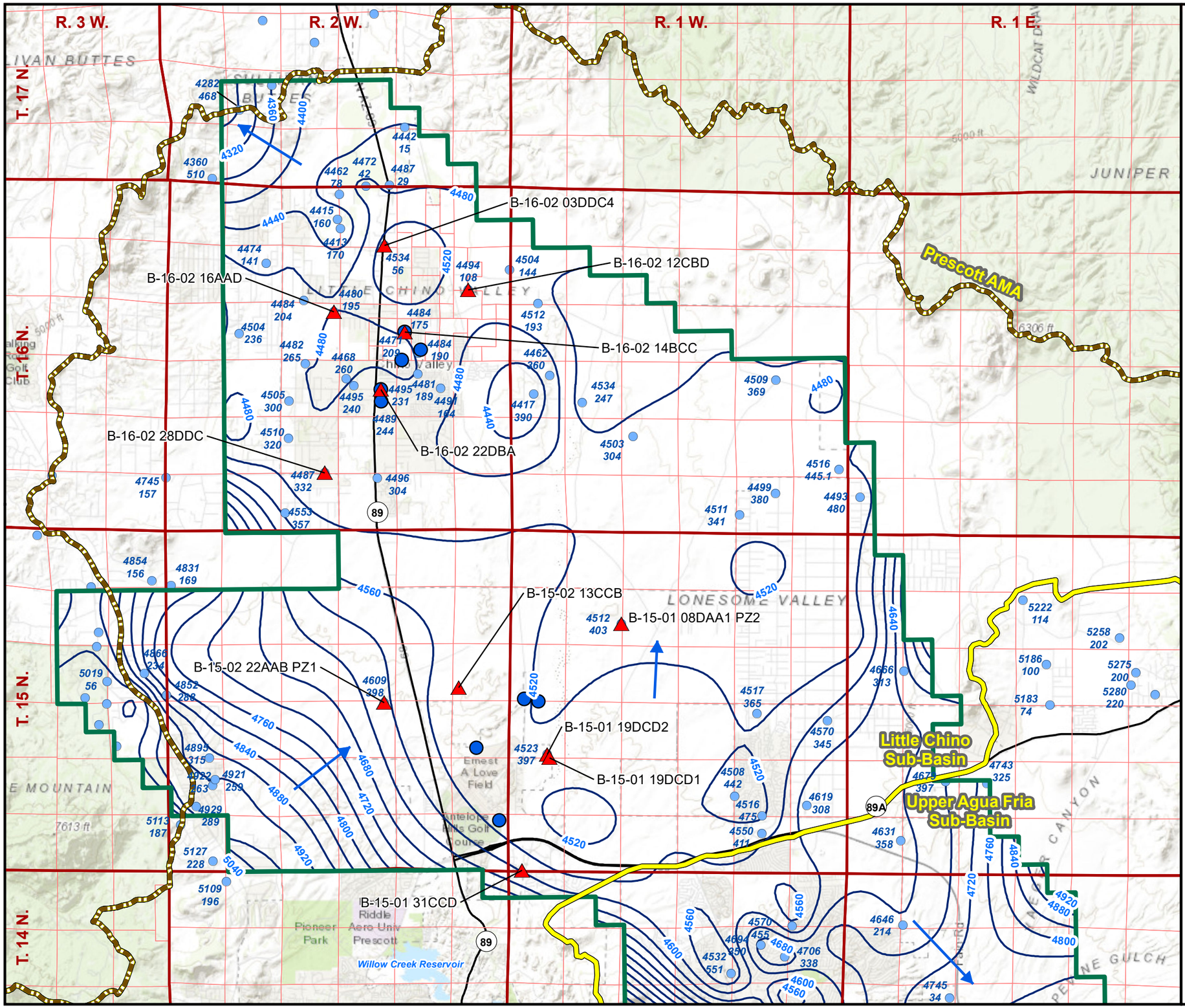
DESIGNATION OF ASSURED WATER SUPPLY MODIFICATION
CITY OF PRESCOTT
YAVAPAI COUNTY, ARIZONA

FIGURE NUMBER: 7

S:\MyDocs\SGCPRJ\2020\20-1132 Prescott DAWS\GIS\ReportMXDs\Figure7_Cross_Section_AA.mxd



EXPLANATION

- GWSI Wells Used for Groundwater Elevation Contouring
- Hydrograph Well
- City of Prescott Well
- Prescott AMA
- Sub-Basin Boundary
- Active Model Boundary
- Groundwater Flow Direction
- Groundwater Elevation Contour (ft amsl) Contour Interval - 40 feet

GWSI Well Label Description

4499 - Water Level Elevation (ft amsl)

380 - Depth to Water (ft bls)

N

0 1 2 3

Miles

Notes

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c)

GROUNDWATER SURFACE ELEVATION MAP FOR WINTER 2019/2020

PROJECT NUMBER: 20-1132

APPROVED BY: DE

DATE: 12/15/2021

DRAWN BY:

DATE: 12/15/2021

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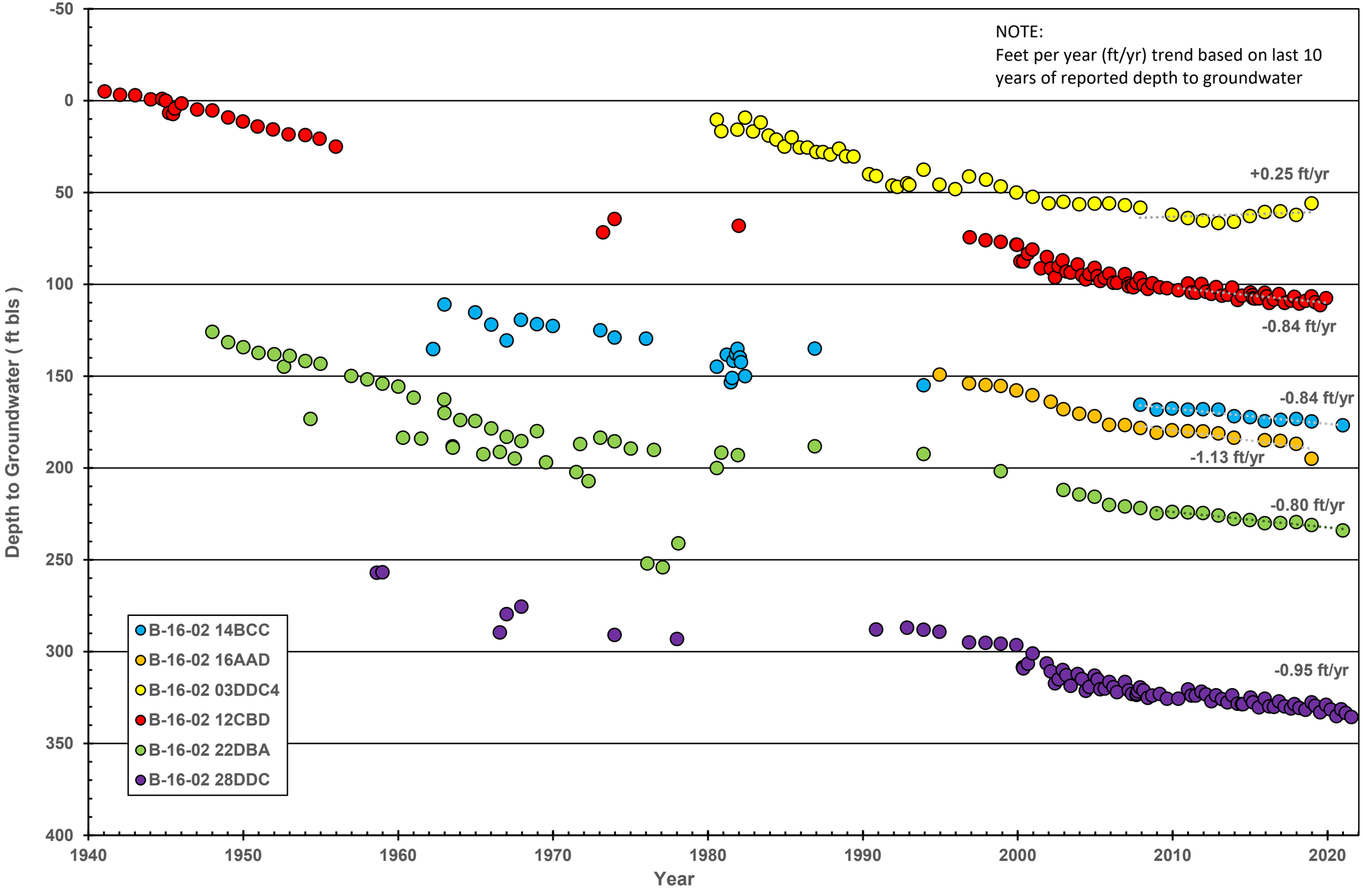
MODIFICATION OF DESIGNATION OF ASSURED WATER SUPPLY CITY OF PRESCOTT YAVAPAI COUNTY, ARIZONA

FIGURE NUMBER:

8

S:\MyDocs\SCCPRJ\2020\20-1132 Prescott DAWS\GIS\Report\MXD\sFigure8_2019_GW_Elevation_Map.mxd



GWSI HYDROGRAPHS
NEAR CHINO VALLEY WELL FIELD

PROJECT NUMBER: 20-1152

DRAWN BY: JH

APPROVED BY: DE

DATE: 12/08/2021

DATE: 12/08/2021

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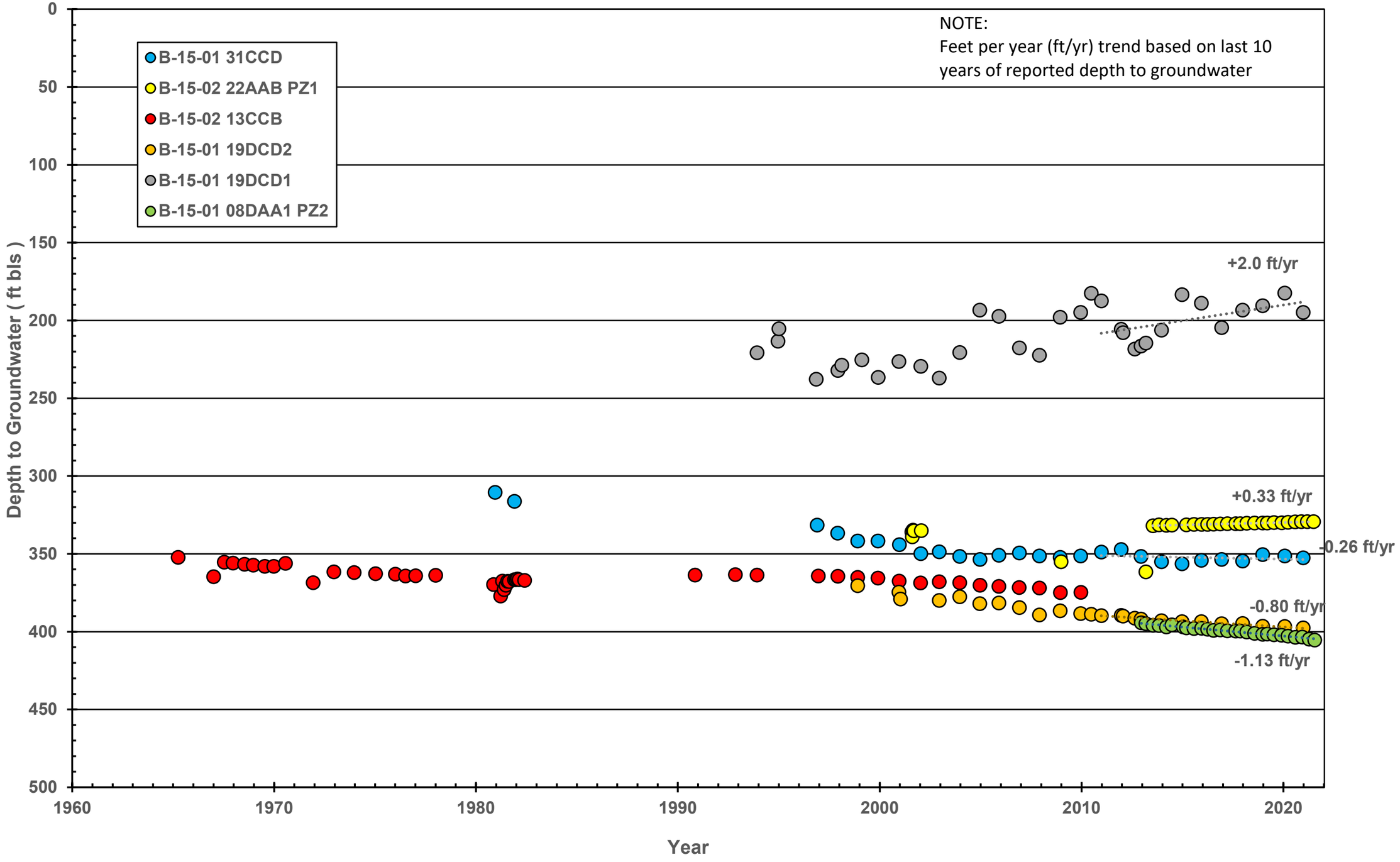
MODIFICATION OF DESIGNATION OF ASSURED WATER SUPPLY
CITY OF PRESCOTT
YAVAPAI COUNTY, ARIZONA

FIGURE NUMBER:

9



GWSI HYDROGRAPHS
NEAR AIRPORT WELL FIELD

DRAWN BY: JH
APPROVED BY: DE
DATE: 12/06/2021
DATE: 12/06/2021
PROJECT NUMBER: 20-1132

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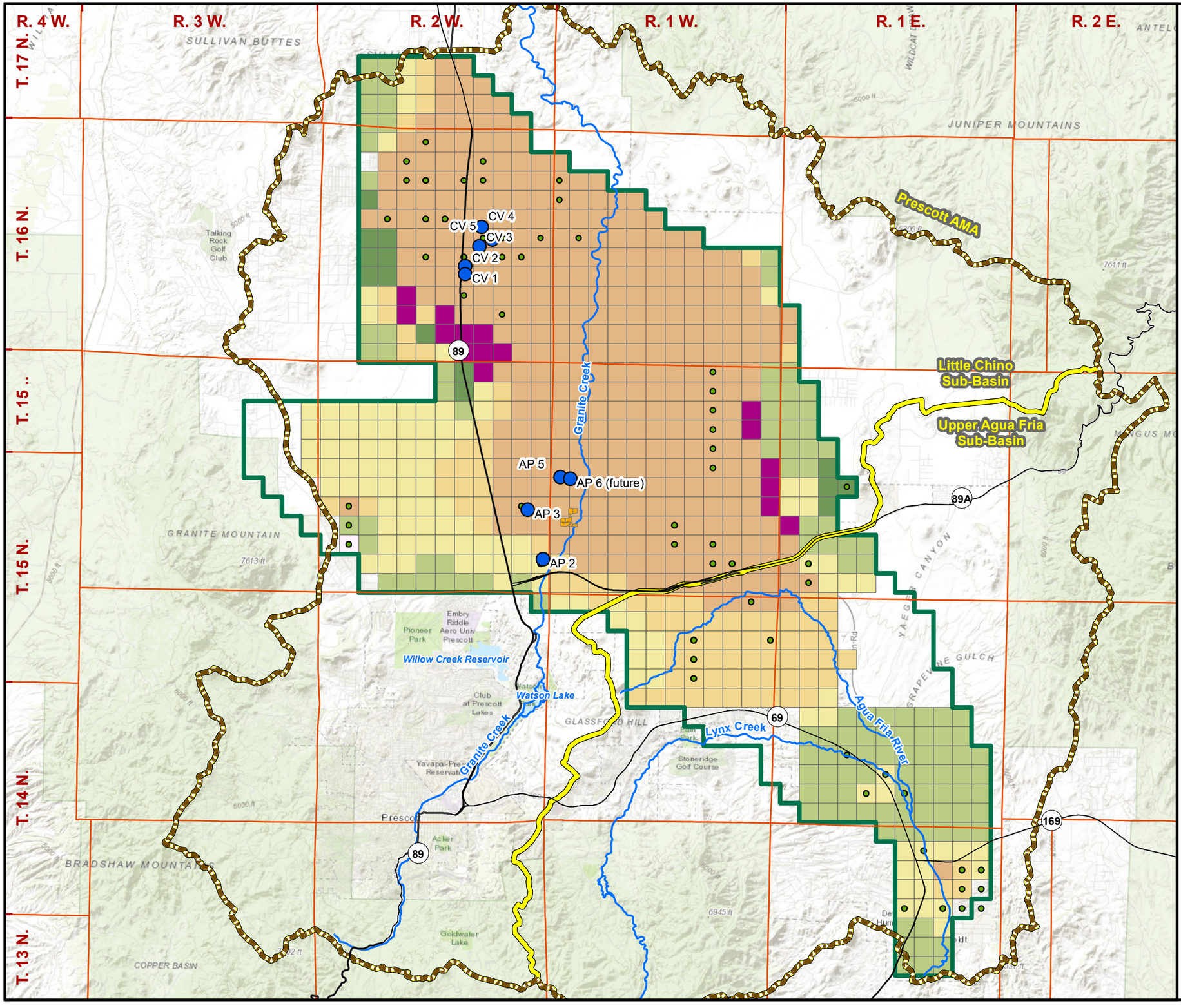
MODIFICATION OF DESIGNATION OF ASSURED WATER SUPPLY
CITY OF PRESCOTT
YAVAPAI COUNTY, ARIZONA

FIGURE NUMBER:
10



EXPLANATION

- City of Prescott Well
- Simulated AWS Well
- City of Prescott Recharge Facility
- Prescott AMA
- Sub-Basin Boundary
- Active Model Boundary
- Stream (ephemeral)

100-year Drawdown in Layer 2 for Fall 2120 (feet)

- < 0
- 0 - 50
- 50 - 100
- 100 - 150
- 150 - 200
- 200 - 250
- 250 - 300
- 300 - 328
- Dry Cell

N

0 1 2 3 4 5
Miles

Notes
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, ADWR

100-YEAR DRAWDOWN

PROJECT NUMBER: 20-1132

APPROVED BY: WS
DATE: 12/15/2021

DRAWN BY: JH
DATE: 12/15/2021

MATRIXNEWORLD
Engineering Progress
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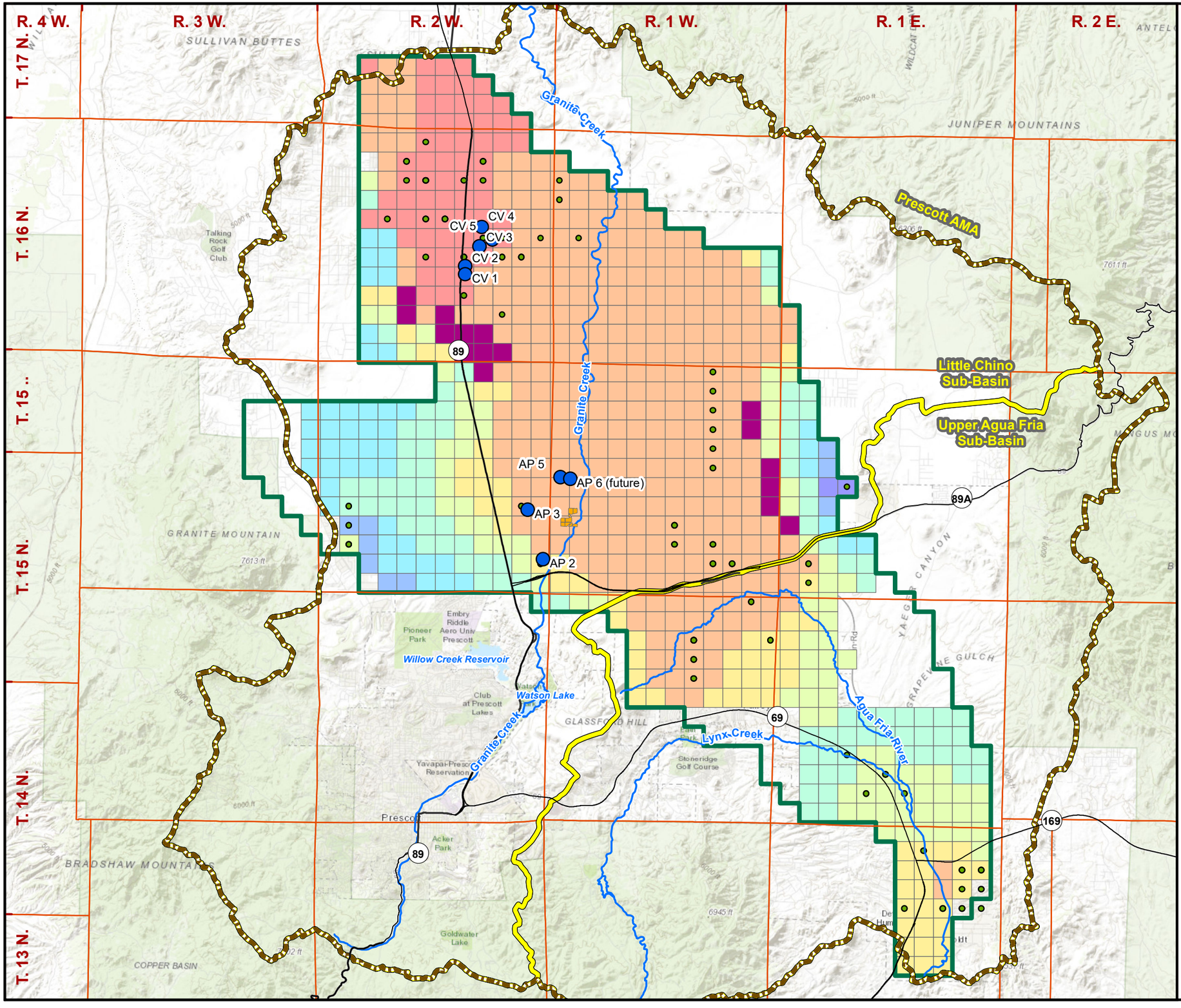
Certified WBE

MODIFICATION OF THE DESIGNATION OF ASSURED WATER SUPPLY
CITY OF PRESCOTT
YAVAPAI COUNTY, ARIZONA

FIGURE NUMBER:
11

S:\MyDocs\SGCPRJ\2020\20-1132 Prescott DAWS\GIS\ReportMXDs\Figure11_100y_Drawdown.mxd



EXPLANATION

- City of Prescott Well
- Simulated AWS Well
- City of Prescott Recharge Facility
- Prescott AMA
- Sub-Basin Boundary
- Active Model Boundary
- Stream (ephemeral)

100-year Groundwater Level in Layer 2 for Fall 2120 (ft amsl)

- 4,256 - 4,300
- 4,300 - 4,400
- 4,400 - 4,500
- 4,500 - 4,600
- 4,600 - 4,700
- 4,700 - 4,800
- 4,800 - 4,900
- 4,900 - 7,634
- Dry Cell

N

0 1 2 3 4 5
Miles

Notes
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, ADWR

100-YEAR
WATER LEVEL ELEVATION

PROJECT NUMBER: 20-1132

DRAWN BY: JH
DATE: 12/15/2021

APPROVED BY: WS
DATE: 12/15/2021

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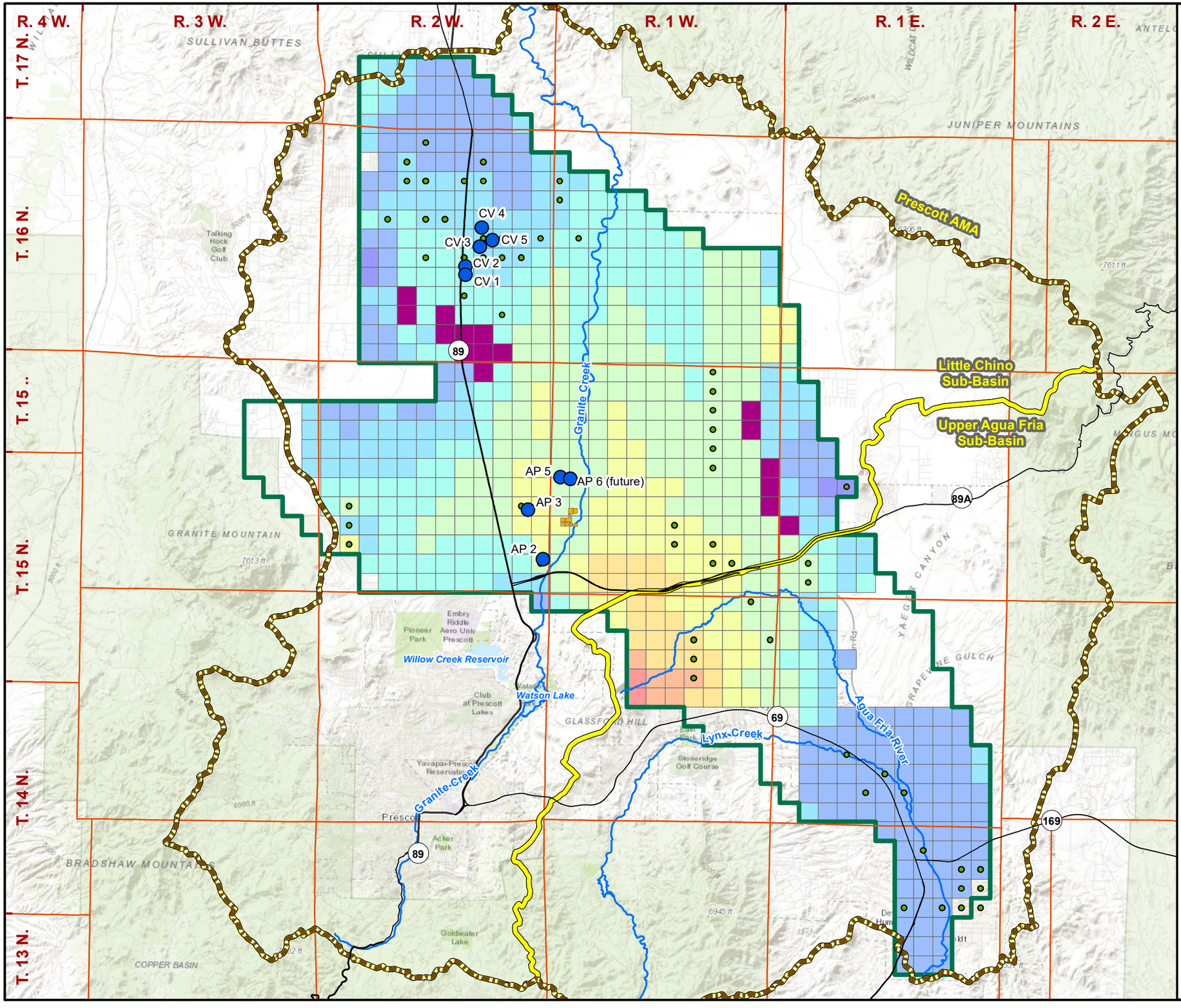
MODIFICATION OF THE DESIGNATION OF ASSURED WATER SUPPLY
CITY OF PRESCOTT
YAVAPAI COUNTY, ARIZONA

FIGURE NUMBER:
12

S:\MyDocs\SGCPR\J\2020\20-1132 Prescott DAWS\GIS\ReportMXDs\Figure12_100yr_WaterLevel.mxd



EXPLANATION

- City of Prescott Well
- Simulated AWS Well
- City of Prescott Recharge Facility
- Prescott AMA
- Sub-Basin Boundary
- Active Model Boundary
- Stream (ephemeral)

100-year Depth to Water in Layer 2 for Fall 2120 (ft bls)

- < 0
- 0 - 300
- 300 - 400
- 400 - 500
- 500 - 600
- 600 - 700
- 700 - 800
- 800 - 1,000
- 1,000 - 1,288
- Dry Cell

N

0 1 2 3 4 5
Miles

Notes
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, ADWR

100-YEAR
DEPTH TO WATER

PROJECT NUMBER: 20-1132

APPROVED BY: WS
DATE: 12/15/2021

DRAWN BY: JH
DATE: 12/15/2021

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MODIFICATION OF THE DESIGNATION OF ASSURED WATER SUPPLY
CITY OF PRESCOTT
YAVAPAI COUNTY, ARIZONA

FIGURE NUMBER:
13

S:\MyDocs\SGCPR\J\2020\20-1132 Prescott DAWS\GIS\ReportMXDs\Figure13_100yr_DepthToWater.mxd

R. 4 W. R. 3 W. R. 2 W. R. 1 W. R. 1 E. R. 2 E.

T. 17 N. T. 16 N. T. 15 .. T. 14 N. T. 13 N.

SULLIVAN BUTTES

JUNIPER MOUNTAINS

GRANITE MOUNTAIN 7613 ft

BRADSHAW MOUNTAINS

COPPER BASIN

Talking Rock Golf Club

Embry Riddle Aero Univ Prescott

Pioneer Park

Willow Creek Reservoir

Watson Lake

Club at Prescott Lakes

GLASSFORD HILL

Yavapai-Prescott Reservation

Stoneridge Golf Course

Acker Park

Goldwater Lake

Prescott

CV 5 CV 4 CV 3 CV 2 CV 1

AP 5 AP 6 (future) AP 3 AP 2

Granite Creek

Lynx Creek

Agua Fria River

Prescott AMA

Little Chino Sub-Basin

Upper Agua Fria Sub-Basin

89 89A 69 169

EXPLANATION

- City of Prescott Well
- Simulated AWS Well
- City of Prescott Recharge Facility
- Prescott AMA
- Sub-Basin Boundary
- Active Model Boundary
- Stream (ephemeral)

100-year Saturated Thickness in Layer 2 for Fall 2120 (feet)

- 0 - 100
- 100 - 200
- 200 - 400
- 400 - 600
- 600 - 800
- 800 - 1,000
- > 1,000
- Dry Cell

N

0 1 2 3 4 5

Miles

Notes

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community, ADWR

100-YEAR SATURATED THICKNESS

PROJECT NUMBER: 20-1132

DRAWN BY: MS DATE: 12/15/2021

APPROVED BY: MS DATE: 12/15/2021

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MODIFICATION OF THE DESIGNATION OF ASSURED WATER SUPPLY CITY OF PRESCOTT YAVAPAI COUNTY, ARIZONA

FIGURE NUMBER: 14

S:\MyDocs\SGCPRJ\2020\20-1132 Prescott DAWS\GIS\ReportMXDs\Figure14_100yr_SaturatedThickness.mxd

MATRIXNEWORLD
Engineering Progress

TABLES

TABLE 1 - Summary Well Information
City of Prescott Production Wells

MATRIXNEWORLD
Engineering Progress

	Chino Valley Well Field					Airport Well Field		
Name	CV-1	CV-2	CV-3	CV-4	CV-5	AP-2	AP-3	AP-5
Cadastral Location	B(16-02) 22dbd	B(16-02) 22dba	B(16-02) 14ccc	B(16-02) 14cba	B(16-02) 14cda	B(15-02) 36aab	B(15-02) 24cda	B(15-02) 18cdc
Latitude	34°44'58.2"	34°45'09.5"	34°45'36.6"	34°46'02.8"	34°45'44.9"	34°38'31.0"	34°39'38.3"	34°40'23.2"
Longitude	-112°27'08.4"	-112°27'08.7"	-112°26'45.2"	-112°26'42.3"	-112°26'24.3"	-112°24'50.6"	-112°25'30.1"	-112°24'26.2"
ADWR Reg. No. (55-)	606025	606024	606023	606022	606021	212087	219158	229228
Year Drilled	1947	1947	1948	1962	?	2006	2012	2020
Lithologic Log	Yes	Yes	No	No	No	Yes	Yes	Yes
Borehole Depth (feet)	700	548	697	679	686	920	1,100	896
Depth LVU (feet bls)	275	283	450	420	435	600	500	390
Depth Casing (feet)	700	548	320	351	309	910	810	598
Casing Diameter (inches)	16	16	14	20	16	18	16	18
Static Water Level (feet bls)	247	234	214	177	193	453	429	393
Saturated Thickness (feet)	453	314	483	502	493	467	671	503
Pump Capacity (gpm)	750	900	1,500	2,000	1,500	1,050	640	1,600
Specific Capacity (gpm/ft)	29	62	148	122	109	12.4	9.4	350
Estimated Transmissivity (gpd/ft)	58,000	124,000	296,000	244,000	218,000	17,600	14,100	668,000

Notes:
bls = Below land surface
gpm = Gallons per minute
gpm/ft = Gallons per minute per foot
gpd/ft = Gallons per day per foot
LVU = Lower Volcanic Unit

TABLE 2 - Issued and Pending Determinations of Assured Water Supply in the PrAMA, December 2021

MATRIXNEWORLD
Engineering Progress

SUBDIVISION NAME	QUAD	TWP	RNG	SECTIONS	SUB-BASIN	LOTS	FILE NUMBER	ISSUED DATE	PRIMARY PROVIDER NAME	APP TYPE	GW (AFA)	NOTES
4 North Business Park	B	16	2	3	LIC	15	27-701156.0000	pending	DRY LOT	CAWS	27.05	
Antelope Village	B	15	1	23,26	LIC	1440	27-300522.0000	12/30/1999	Town of Prescott Valley	CAWS	474	
Appaloosa Meadows Phases I,II and III	B	16	2	9,10	LIC	318	27-300352.0000	1/16/1998	Appaloosa Water Co	CAWS	108.1	
Aspen Acres	B	13	2	7	LIC	10	53-500302.0000	4/10/1980	City of Prescott	Water Report	0	Incl. in CoP DAWS 86-401501.0001
Bee Mountain Estates	B	16	2	27	LIC	20	27-200007.0000	4/20/1987	DRY LOT	CAWS	20	
Bright Star Phase 3	B	16	2	24	LIC	166	27-500060.0000	6/20/2007	Town of Chino Valley	CAWS	38.17	
Bright Star, Unit 1, Phase 2, Unit 2, Phase 2	B	16	2	13,24	LIC	125	27-401835.0000	10/21/2005	Town of Chino Valley	CAWS	35.42	
BrightStar at Chino Valley	B	16	2	24	LIC	80	27-400861.0000	8/18/2003	Town of Chino Valley	CAWS	27.543	
Century Ranch	B	16	2	13	LIC	425	28-701052.0000	9/17/2019	Undetermined	AAWS	281.45	
Chino de Manana	B	16	2	10	LIC	20	27-200053.0000	5/15/1989	DRY LOT	CAWS	10	
Chino Meadows #4	B	16	2	23	LIC	98	27-200052.0000	8/6/1994	Town of Chino Valley	CAWS	27.7	
Chino Valley Business Park & Marketplace	B	16	2	15	LIC	13	27-300455.0000	7/14/1998	DRY LOT	CAWS	13	
City of Prescott					LIC		86-401501.0001	12/30/2009	City of Prescott	DAWS	9466.02	Groundwater allowance in existing D&O
City of Prescott					LIC			pending	City of Prescott	DAWS	481.32	Addtl groundwater allowance volume proposed in Modificat
Colonial Villas	B	16	2	23	LIC	60	27-700393.0000	1/15/2008	Town of Chino Valley	CAWS	10.97	
Commerce Park	B	16	2	10	LIC	9	27-300334.0000	10/16/1997	DRY LOT	CAWS	4.02	
Del Sol	B	16	2	14	LIC	20	27-701206.0000	pending	DRY LOT	CAWS	71.41	
Easy Street Estates	B	16	2	16	LIC	42	27-300511.0000	3/29/1999	DRY LOT	CAWS	9.6	
Fire Sky Ranch	B	16	2	21	LIC	18	27-300440.0000	7/27/1998	DRY LOT	CAWS	4.1	
Gold Rush Ranches	B	16	2	21	LIC	16	27-200122.0000	4/6/1993	DRY LOT	CAWS	5.6	
Granite Mountain Homesites #3	B	15	2	31	LIC	8	27-200128.0000	9/15/1982	DRY LOT	CAWS	3	
Granite Mountain Homesites #4	B	15	2	31	LIC	19	27-200126.0000	8/18/1986	Granite Mtn. Water Co.	CAWS	3.5	
Granite Oaks Estates	B	15	2	30	LIC	10	27-300400.0000	8/27/1998	Granite Oaks Water Users Assoc	CAWS	3.36	
Granite Oaks I, Units 1, 2, 3	B	15	2	19	LIC	160	27-200129.0000	3/6/1990	Granite Oaks Water Users Assoc	CAWS	117.6	
Granite Oaks I, Units 4 & 5	B	15	2	19	LIC	141	27-200130.0000	11/27/1992	Granite Oaks Water Users Assoc	CAWS	52.7	
Granite Oaks II	B	15	2	19	LIC	14	27-200131.0000	9/28/1994	Granite Oaks Water Users Assoc	CAWS	5.6	
Granite Park Ranch	B	15	2	30	LIC	29	27-300158.0000	8/30/1996	Granite Mtn. Water Co.	CAWS	8.57	
Grassland	B	16	2	4	LIC	16	27-200132.0000	12/15/1980	DRY LOT	CAWS	4.1	
Hawksnest Estates	B	16	2	15	LIC	150	27-700399.0000	12/19/2007	Town of Chino Valley	CAWS	37.07	
Headwaters Ranch Country Club	B	17	2	35	LIC	1385	53-500778.0000	6/18/1993	Undetermined	Water Report	1120	
Heritage Farms	B	16	2	15	LIC	145	28-700836.0000	6/5/2015	Undetermined	AAWS	156.18	
Heritage Pointe	B	16	2	9	LIC	75	31-300352.0003	10/2/2020	DRY LOT	CAWS	18.65	
Highlands Ranch	B	16	2	23	LIC	210	27-401234.0000	10/8/2004	Town of Chino Valley	CAWS	60.467	
Highlands Ranch Unit 1B & Unit 2	B	16	2	23	LIC	349	27-401741.0000	1/25/2006	Town of Chino Valley	CAWS	74.91	
I U Bar Ranch Estates	B	16	1	18,19	LIC	15	27-200147.0000	3/9/1988	DRY LOT	CAWS	11.1	
I U Bar Ranch Estates	B	16	1	18,19	LIC	56	27-200148.0000	6/12/1989	DRY LOT	CAWS	37.6	
Luna Estates	B	16	2	10	LIC	31	27-200188.0000	8/21/1989	DRY LOT	CAWS	9	
Mingus Meadows Estates	A	16	1	31	LIC	171	28-500006.0000	7/19/2007	Undetermined	AAWS	0	Expired 2016
Old Home Manor	B	16	1 & 2	7 & 12	LIC		28-701146.0000	pending	Town of Chino Valley	AAWS	1637.2	
Perkinsville 40	A	16	2	14	LIC	163	27-701162.0000	pending	Town of Chino Valley	CAWS	27.75	
Point of View Patio Homes	B	15	1	35	LIC	32	27-700969.0000	1/17/2018	Town of Prescott Valley	CAWS	7.85	
Poquito Valley Development	B	15	1	2,11,14,23,26,35	LIC	48	27-200236.0000	3/9/1988	DRY LOT	CAWS	48.3	
Prescott Buttes	B	14	2	31	LIC	38	27-300581.0000	3/5/1999	City of Prescott	CAWS	0	Incl. in CoP DAWS 86-401501.0001
Quail Ridge	B	16	2	5	LIC	180	27-300493.0000	10/14/1998	Quail Ridge DWID	CAWS	71.43	
Rancho Santa Maria	B	16	2	17	LIC	87	27-200279.0000	9/26/1983	DRY LOT	CAWS	57	
Rancho Santa Maria #2	B	16	2	17	LIC	18	27-200280.0000	5/23/1994	DRY LOT	CAWS	5.04	
Rancho Santa Maria #2, 3	B	16	2	17	LIC	38	27-200281.0000	3/17/1995	DRY LOT	CAWS	10.6	
Rancho Santa Maria Unit Two	B	16	2	17	LIC	19	27-400162.0000	11/12/1999	DRY LOT	CAWS	180.3	
Royal Oaks	B	15	2	30	LIC	165	27-200294.0000	10/28/1991	Granite Oaks Water Users Assoc	CAWS	42.3	
Royal Oaks Lots 166-185	B	15	2	30	LIC	20	27-200295.0000	4/4/1994	Granite Oaks Water Users Assoc	CAWS	8	
Stetson Ranch	B	16	2	4	LIC	14	27-200319.0000	7/8/1985	DRY LOT	CAWS	6.27	
Sunrise	B	16	2	11	LIC	43	53-501503.0000	2/3/1977	DRY LOT	Water Report	11.02	
Tony Town	B	16	2	11	LIC	57	27-300418.0000	8/27/1998	DRY LOT	CAWS	13	
Ventura Ranch	A	15	1	17	LIC	180	27-701036.0000	6/3/2020	Ventura Ranch DWID	CAWS	34.89	
Viewpoint North, The	B	15	1	23,26,35	LIC	1986	27-300434.0000	8/27/1998	Town of Prescott Valley	CAWS	679	
Viewpoint, Phase I	B	15	1	23,26,35	LIC	112	27-300019.0000	5/15/1995	Town of Prescott Valley	CAWS	28.71	
Viewpoint, The	B	15	1	23,26,35	LIC	488	27-300183.0000	8/29/1996	Town of Prescott Valley	CAWS	168.6	
Vista de Chino	B	16	2	17	LIC	80	27-200388.0000	5/27/1987	DRY LOT	CAWS	36.9	
Vista Grande Estates, Unit IV	B	16	2	26	LIC	118	27-300323.0000	12/1/1997	DRY LOT	CAWS	40.3	
Willow Lake Estates	B	14	2	15	LIC	277	27-200407.0000	6/10/1981	City of Prescott	CAWS	0	Incl. in CoP DAWS 86-401501.0001
Yo He Wah	B	16	2	4	LIC	32	27-200408.0000	4/28/1983	DRY LOT	CAWS	14.4	

Total AWS Demand in LIC (AFA) 15,968

Notes:
AFA = acre-feet per year

TABLE 2 - Issued and Pending Determinations of Assured Water Supply in the PrAMA, December 2021

MATRIXNEWORLD
Engineering Progress

SUBDIVISION NAME	QUAD	TWP	RNG	SECTIONS	SUB-BASIN	LOTS	FILE NUMBER	ISSUED DATE	PRIMARY PROVIDER NAME	APP TYPE	GW (AFA)	NOTES
Antelope Park 1	B	15	1	35	UAF	102	27-300525.0000	3/2/1999	Town of Prescott Valley	CAWS	47.3	
Antelope Park 2	B	15	1	35	UAF	75	27-300526.0000	3/2/1999	Town of Prescott Valley	CAWS	121.4	
Castle Canyon Mesa #2	B	14	1	15,22	UAF	19	27-200044.0000	9/16/1992	Town of Prescott Valley	CAWS	5.43	
Castle Canyon Mesa #4	B	14	1	15	UAF	118	27-200045.0000	10/25/1993	Town of Prescott Valley	CAWS	33.7	
Chaparral Heights	A	13	1	10,15	UAF	34	27-300178.0000	1/21/1997	DRY LOT	CAWS	10.5	
Clearview Estates	A	13	1	1,12	UAF	22	27-200059.0000	11/4/1985	DRY LOT	CAWS	12.9	
Command Estates	A	13	1	12	UAF	47	27-200074.0000	9/4/1980	DRY LOT	CAWS	22.1	
Command Estates #2	A	13	1	13	UAF	17	27-200075.0000	7/21/1985	DRY LOT	CAWS	8	
Country Club Townhomes	A	14	1	28,33	UAF	76	27-200081.0000	3/11/1985	Town of Prescott Valley	CAWS	21.3	
Creekside of Prescott Phase 3	B	14	1	33	UAF	25	27-400759.0000	11/15/2002	Bradshaw Water Co	CAWS	6.24	Served by TofPV
Creekside of Prescott, Phase 1	B	14	1	33	UAF	33	27-300045.0000	10/12/1995	Bradshaw Water Co	CAWS	8.72	Served by TofPV
Creekside of Prescott, Phase 2	B	14	1	33	UAF	39	27-300513.0000	4/15/1999	Bradshaw Water Co	CAWS	12.48	Served by TofPV
Fairway Patio Homes	A	14	1	18	UAF	5	27-200117.0000	1/10/1983	Town of Prescott Valley	CAWS	4.7	
Granville Masterplan	B	14	1	3,10,15	UAF	2568	27-300494.0000	10/3/2000	Town of Prescott Valley	CAWS	1146.81	Effluent delivered - 454.8 AFA
Golden View Estates	A	13	1	12	UAF	14	27-200123.0000	6/10/1982	DRY LOT	CAWS	14	
Green View Townhomes	A	14	1	28	UAF	34	27-300527.0000	3/29/1999	Town of Prescott Valley	CAWS	9.359	
Indian Castles	A	13	1	12	UAF	17	27-200149.0000	9/4/1980	DRY LOT	CAWS	8	
Jasper Masterplan	B	14	1	4,9	UAF	2931	28-701015.0000	7/9/2019	Town of Prescott Valley	AAWS	1290.11	AWS of Phase 1 is met by TofPV effluent credits
Lynx Mountain View Estates	B	14	1	33	UAF	95	27-200189.0000	7/3/1986	Bradshaw Water Co	CAWS	24.2	Served by TofPV
Lynx Mountain View Estates	B	14	1	33	UAF	122	27-200190.0000	6/12/1989	Bradshaw Water Co	CAWS	28.7	Served by TofPV
Lynx Mountain View Estates #6	B	14	1	33	UAF	39	27-200191.0000	10/25/1993	Bradshaw Water Co	CAWS	8.3	Served by TofPV
Meadow Ranch	A	13	1	1,12	UAF	34	27-200196.0000	5/30/1995	DRY LOT	CAWS	11.4	
Meadow View	A	13	1	1,12	UAF	40	27-401979.0000	9/5/2006	DRY LOT	CAWS	10.25	
Mingus View Condominiums	B	14	1	13	UAF	12	27-401543.0000	3/18/2005	Town of Prescott Valley	CAWS	2.71	
Mingus West	A	15	1	23	UAF	468	27-300225.0000	10/16/1997	Town of Prescott Valley	CAWS	147.4	
Parker Hill	A	13	1	15	UAF	186	27-200218.0000	3/2/1982	Humboldt Water Inc.	CAWS	100.1	
Prescott Country Club	A	14	1	28,29,33	UAF	87	27-200240.0000	5/6/1987	Town of Prescott Valley	CAWS	23.2	
Prescott Country Club	A	14	1	28,29,33	UAF	104	27-200241.0000	5/8/1987	Town of Prescott Valley	CAWS	27.7	
Prescott Country Club #6	A	14	1	29	UAF	54	27-200242.0000	3/29/1994	Town of Prescott Valley	CAWS	15.2	
Prescott Country Club #6, phase 2	A	14	1	29	UAF	31	27-300111.0000	5/16/1996	Town of Prescott Valley	CAWS	8.75	
Prescott East #1,2	B	14	1	15,22	UAF	40	27-200243.0000	9/1/1981	Town of Prescott Valley	CAWS	6.81	
Prescott Valley	A	14	1	7	UAF	49	27-200244.0000	1/28/1981	Town of Prescott Valley	CAWS	12.56	
Prescott Valley	B	14	1	11,12,13	UAF	51	27-200245.0000	1/28/1981	Town of Prescott Valley	CAWS	13.07	
Prescott Valley #09	B	14	1	1	UAF	10	27-200247.0000	2/3/1981	Town of Prescott Valley	CAWS	4.7	
Prescott Valley #15	B	14	1	1	UAF	4	27-200248.0000	3/23/1981	Town of Prescott Valley	CAWS	1.03	
Prescott Valley #18-20	A	14	1	7	UAF	8	27-200249.0000	1/14/1982	Town of Prescott Valley	CAWS	2.05	
Prescott Valley #18-20	B	15	1	35	UAF	8	27-200251.0000	1/14/1982	Town of Prescott Valley	CAWS	2.05	
Prescott Valley #19	B	14	1	11	UAF	4	27-200253.0000	6/21/1993	Town of Prescott Valley	CAWS	1.14	
Prescott Valley #19	B	14	1	11	UAF	6	27-200252.0000	4/23/1987	Town of Prescott Valley	CAWS	1.08	
Prescott Valley #20	A	14	1	7	UAF	8	27-200255.0000	10/25/1993	Town of Prescott Valley	CAWS	2.88	
Prescott Valley #20	B	14	1	1	UAF	1	27-200254.0000	8/24/1981	Town of Prescott Valley	CAWS	0.26	
Prescott Valley Business Park	A	14	1	19	UAF	44	27-200256.0000	4/15/1983	Town of Prescott Valley	CAWS	72	
Prescott Valley, Town of	B	14	1	1,12,13	UAF	42	27-200257.0000	11/14/1989	Town of Prescott Valley	CAWS	9.4	
Quad Villas	B	14	1	12	UAF	8	27-200259.0000	3/17/1982	Town of Prescott Valley	CAWS	6.05	
Quad Villas #2	B	14	1	12	UAF	4	27-200260.0000	3/17/1982	Town of Prescott Valley	CAWS	1.03	
Quailwood Meadows	A	14	1	27,34,35	UAF	1012	27-300521.0000	3/29/1999	Town of Prescott Valley	CAWS	390.77	
Quailwood Meadows Townhomes	A	14	1	34	UAF	204	27-401653.0000	8/29/2005	Town of Prescott Valley	CAWS	64.16	
Rancho Hi Meadows	A	13	1	11	UAF	6	53-501263.0000	5/5/1980	DRY LOT	Water Report	1.54	
Rolling Ridge Ranches	A	13	1	11	UAF	10	27-200293.0000	10/6/1980	DRY LOT	CAWS	4.7	
StoneRidge	B	14	1	26,27,35	UAF	3053	27-300483.0000	4/14/2000	Town of Prescott Valley	CAWS	829.14	Effluent delivered - 450 AFA
Town and Country Industrial Pk	B	14	1	22,23	UAF	43	27-200352.0000	8/3/1984	Town of Prescott Valley	CAWS	43	
Town and Country Industrial Pk	B	14	1	23	UAF	35	27-200351.0000	12/10/1982	Town of Prescott Valley	CAWS	8.97	
Town and Country Valley Mall	B	14	1	14,23	UAF	300	27-200353.0000	3/30/1981	Town of Prescott Valley	CAWS	54	
Victorian Estates Unit I & II	B	14	1	21,28	UAF	179	27-200375.0000	5/23/1994	Town of Prescott Valley	CAWS	41.1	
Villages at Lynx Creek	A	14	1	27,34	UAF	515	27-200380.0000	4/11/1989	Town of Prescott Valley	CAWS	57.7	
Villas, The	B	14	1	13	UAF	8	27-200384.0000	9/14/1982	Town of Prescott Valley	CAWS	2.05	
Vista View Estates	A	13	1	1,12	UAF	8	27-200387.0000	7/4/1980	DRY LOT	CAWS	2.05	
Wagon Wheel Condominiums	A	14	1	33	UAF	4	27-200394.0000	7/12/1988	Town of Prescott Valley	CAWS	0.8	
White Peaks	A	13	1	14	UAF	76	53-501680.0000	10/15/1974	Humboldt Water Inc.	Water Report	11	

Total AWS Demand in UAF (AFA) 4,838

Notes:

AFA = acre-feet per year

TABLE 3 - Projection of Effluent and Surface Water Recharged at the Prescott Recharge Facility

MATRIXNEWORLD
Engineering Progress

Year	Treated Wastewater (Acre-ft)	Direct Re-Use (Acre-ft)	Effluent Delivered to Recharge Basins (Acre-ft)	Surface Water Supply (Acre-ft)	Estimated Evaporation (Acre-ft)	Total Recharge (Acre-ft)
0	4282	1718	2565	2982	28	5518
1	4518	1734	2784	1925	31	4678
2	4599	1753	2846	1925	31	4739
3	4678	1772	2905	1925	32	4798
4	4756	1791	2965	1925	33	4857
5	4834	1810	3024	1925	33	4916
6	4911	1829	3083	1925	34	4974
7	4989	1848	3141	1925	35	5031
8	5065	1867	3198	1925	35	5088
9	5142	1886	3256	1925	36	5145
10	5218	1904	3313	1925	36	5202
11	5293	1923	3370	1925	37	5258
12	5369	1942	3426	1925	38	5314
13	5444	1961	3483	1925	38	5370
14	5519	1980	3539	1925	39	5425
15	5595	1999	3596	1925	40	5481
16	5670	2018	3653	1925	40	5537
17	5746	2037	3709	1925	41	5593
18	5821	2056	3766	1925	41	5649
19	5897	2075	3822	1925	42	5705
20	5972	2093	3879	1925	43	**5761**

Notes: Acre-ft = Acre-feet

Bold font = 100-Yr Model Simulated Recharge Volume

TABLE 4 - 100-Year Simulated Pumping
City of Prescott Production Wells

MATRIXNEWORLD
Engineering Progress

Model Row	Model Column	Well Name	ADWR Registration No. (55-)	Withdrawal Volume (ac-ft/yr)	Pumping Rate (gpm)
12	14	CV-1	606025	692.30	429.20
12	14	CV-2	606024	778.80	482.83
10	15	CV-3	606023	2,282.00	1,414.75
10	15	CV-4	606022	3,429.00	2,125.85
10	16	CV-5	606021	2,542.00	1,575.94
27	18	AP-2	212087	164.10	101.74
24	17	AP-3	219158	382.90	237.38
22	19	AP-5	229228	2,461.50	1,526.03
23	20	AP-6	TBD	2,461.50	1,526.03
			TOTAL:	**15,194.10**	**9,419.75**

Notes:
ac-ft/yr = Acre-feet per year
gpm = Gallons per minute
TBD = To be determined

MATRIXNEWORLD
Engineering Progress

APPENDICES

MATRIXNEWORLD
Engineering Progress

APPENDIX A

Selected Area Well Driller Logs

X 7/5/06

Arizona Department of Water Resources
Records Management Section
3550 N. Central Ave. γ Phoenix, Arizona 85012
(602) 771-8627 γ (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.

RECEIVED SEP 27 2006 Information Management

FILE NUMBER: B (15-2) 36 AAB
WELL REGISTRATION NUMBER: 55 – 212087
PERMIT NUMBER (IF ISSUED): 59-212086

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: City of Prescott
MAILING ADDRESS: 433 N. Virginia St
CITY / STATE / ZIP CODE: Prescott, AZ 86303
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER:
FAX:

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
15N	2W	36	NE ¼	NE ¼	NW ¼

LATITUDE: ° ' "N
LONGITUDE: ° ' "W
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF LATITUDE / LONGITUDE (CHECK ONE): ☐ Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ GPS: ☐ Survey-Grade
COUNTY ASSESSOR'S PARCEL ID NUMBER: BOOK | MAP | PARCEL
COUNTY WHERE WELL IS LOCATED: YAVAPI

SECTION 2. DRILLING AUTHORIZATION

Drilling Firm

NAME: Layne Christensen Co.
DWR LICENSE NUMBER: #7
TELEPHONE NUMBER: 480-895-9404
FAX: 480-895-8699

SECTION 3. WELL CONSTRUCTION DETAILS

DATE WELL CONSTRUCTION STARTED: 7-13-06
DATE WELL CONSTRUCTION COMPLETED: 8-20-06
IF FLOWING WELL, METHOD OF FLOW REGULATION: ☐ Valve ☐ Other:

Drill Method (CHECK ONE)

- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☐ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☒ Other *(please specify)*:

Method of Well Development (CHECK ONE)

- ☑ Airlift
- ☐ Bail
- ☒ Surge Block
- ☐ Surge Pump
- ☐ Other *(please specify)*:

Water Level Information

STATIC WATER LEVEL: Feet Below Land Surface
DATE MEASURED:

Method of Sealing at Reduction Points (CHECK ONE)

- ☐ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other *(please specify)*:

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 212087

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Borehole			Installed Casing														
DEPTH FROM SURFACE			DEPTH FROM SURFACE			MATERIAL TYPE (T)				PERFORATION TYPE (T)							
FROM (feet)	TO (feet)	BOREHOLE DIAMETER (inches)	FROM (feet)	TO (feet)	OUTER DIAMETER (inches)	STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	39	36"	+1'	39'	30	X				X						
39	920	26"	+4'	550'	18 5/8	X			HSLA	X						
			550'	900'	"	X			"			X			Full-Flow Louvered	0.050
			900'	910'	"	X			"	X						

Installed Annular Material													
DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (T)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	39'			X								
39'	147'										X	3/8 Pea Gravel
147'	152'							X				3/8
152'	263'										X	3/8 Pea Gravel
263'	269'							X				3/8
269'	465'										X	3/8 Pea Gravel
465'	506'			X								
506'	513'							X				3/8
513'	920'									X		Silica Sand 8-12

DEPTH OF BORING 920' Feet Below Land Surface

DEPTH OF COMPLETED WELL 910' Feet Below Land Surface

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 212087

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	Description Describe material, grain size, color, etc.	Check (T) every interval where water was encountered (if known)
0	210'	Sand + Gravel	
210'	220'	Sand + Gravel w/ Clay	
220'	300'	Gravel + Sand	
300'	360'	Sandy Clay	
360'	380'	Sand + Gravel	
380'	600'	Clay, Sand + Gravel	
600'	640'	Basalt w/ Clay	
640'	710'	Basalt with Red Clay	
710'	910'	Sand + Gravel	
910'	920'	Sand + Gravel with Red Clay	

RECEIVED

MAY 18 2020

ADWR

Arizona Department of Water Resources
Groundwater Permitting and Wells Section
P.O. Box 36020, Phoenix, AZ 85067-6020
(602) 771-8527 • Fax (602) 771-8689
www.azwater.gov

Pump Installation Completion Report

- Review instructions prior to completing form in black or blue ink.
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment.

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 219158

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
City of Prescott

MAILING ADDRESS
433 N. Virginia Street

CITY / STATE / ZIP CODE
Prescott/AZ/86301

CONTACT PERSON NAME AND TITLE
Leslie Graser, Water Res. Proj. Mgr

TELEPHONE NUMBER
928-777-1144

FAX
NA

Location of Well

WELL LOCATION ADDRESS (IF ANY)
4000 Ruger Road

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
15N	2W	24	SW ¼	SE ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	02	004A

COUNTY WHERE WELL IS LOCATED
Yavapai

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED
3/17/2020

Pump Type

CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☐ Submersible
- ☒ Turbine
- ☐ Other (*please specify*):

RATED PUMP CAPACITY
640 Gallons Per Minute

Pitless Adaptor

CHECK ONE *(SEE INSTRUCTIONS FOR DEFINITION)*

Was a pitless adaptor installed? ☐ Yes ☒ No

IF YES, DEPTH BELOW GROUND LEVEL THE DEVICE WAS INSTALLED
Feet

Power Type

CHECK ONE

- ☐ Diesel Engine
- ☒ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (*please specify*):

HORSE POWER RATING OF MOTOR
300

SECTION 3. PUMP TEST

Pump Test Data

DATE WELL TESTED
12/5/2011

STATIC WATER LEVEL (A)
429.5 Feet Below Land Surface

PUMPING WATER LEVEL (B)
514.9 Feet Below Land Surface

DRAWDOWN [(B) – (A)]
85.4 Feet Below Land Surface

TEST PUMPING RATE
800 Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours)
6 Hours

TOTAL PUMPING LIFT
780 Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement

CHECK ONE

- ☐ Bailer
- ☐ Bucket – Barrel – Stopwatch
- ☐ Current
- ☐ Estimated – Air Lift
- ☐ Gauge
- ☒ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir – Flume
- ☐ Other (*please specify*):

Method of Measuring Water Level

CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (*please specify*):

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief according to A.R.S. § 45-600(B).

SIGNATURE OF WELL OWNER Leslie Graser

Digitally signed by Leslie Graser
DN: cn=Leslie Graser, c=US, o=City of Prescott, ou=Public Works, email=leslie.graser@prescott-az.gov
Reason: I agree to the specified portions of this document
Date: 2020.05.07 17:01:09 -07'00'

DATE 5/7/2020

Arizona Department of Water Resources
Information Management Unit
P.O. Box 33589 Phoenix, Arizona 85067-3589
(602) 771-8627 • (800) 352-8488
www.azwater.gov

Well Driller Report and Well Log

THIS REPORT MUST BE FILED WITHIN **30 DAYS** OF COMPLETING THE WELL.

PLEASE PRINT CLEARLY USING BLACK OR BLUE INK.

FILE NUMBER: B (16-2) 24 CDA

WELL REGISTRATION NUMBER: **55 - 219158**

PERMIT NUMBER (IF ISSUED):

Drilling Firm

Mail To:

NAME: Layne Christensen Company

ADDRESS: 12030 E. Riggs Road

CITY / STATE / ZIP: Chandler, AZ 85249-3701

DWR LICENSE NUMBER: 7

TELEPHONE NUMBER: 480-895-9404

FAX:

RECEIVED
JUL 22 2013
ARIZONA DEPARTMENT OF WATER RESOURCES

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: CITY OF PRESCOTT

MAILING ADDRESS: P. O. BOX 2059

CITY / STATE / ZIP CODE: PRESCOTT, AZ 86302

CONTACT PERSON NAME AND TITLE: Benjamin Burns, CIP Manager

TELEPHONE NUMBER: 928-777-1602

FAX:

WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.): Airport Well #3

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
15N	2W	24	SW ¼	SE ¼	NE ¼

LATITUDE			LONGITUDE		
° Degrees	' Minutes	"N Seconds	° Degrees	' Minutes	"W Seconds

METHOD OF LATITUDE/LONGITUDE (CHECK ONE)
☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE)
☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*GEOGRAPHIC COORDINATE DATUM (CHECK ONE)
☐ NAD-83 ☐ Other (*please specify*):

COUNTY:

ASSESSOR'S PARCEL ID NUMBER — BOOK: | MAP: | PARCEL:

Drill Method

CHECK ALL THAT APPLY
- ☐ Air Rotary
- ☐ Bored or Augered
- ☐ Cable Tool
- ☒ Dual Rotary
- ☐ Mud Rotary
- ☐ Reverse Circulation
- ☐ Driven
- ☐ Jetted
- ☐ Air Percussion / Odex Tubing
- ☐ Other *(please specify):*

Method of Well Development

CHECK ALL THAT APPLY
- ☐ Airlift
- ☐ Bail
- ☐ Surge Block
- ☒ Surge Pump
- ☐ Other *(please specify):*

Condition of Well

CHECK ONE
- ☒ Capped
- ☐ Pump Installed

Method of Sealing at Reduction Points

CHECK ONE
- ☒ None
- ☐ Packed
- ☐ Swedged
- ☐ Welded
- ☐ Other *(please specify):*

Construction Dates

DATE WELL CONSTRUCTION STARTED: June 7, 2011

DATE WELL CONSTRUCTION COMPLETED: January 7, 2012

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

SIGNATURE OF QUALIFYING PARTY:

DATE:

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 219158

SECTION 4 WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional pages if needed)

Depth

DEPTH OF BORING		DEPTH OF COMPLETED WELL	
1,100	Feet Below Land Surface	895	Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL		DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
429	Feet Below Land Surface	12/5/11	10:00	☐ Valve ☐ Other:

Borehole

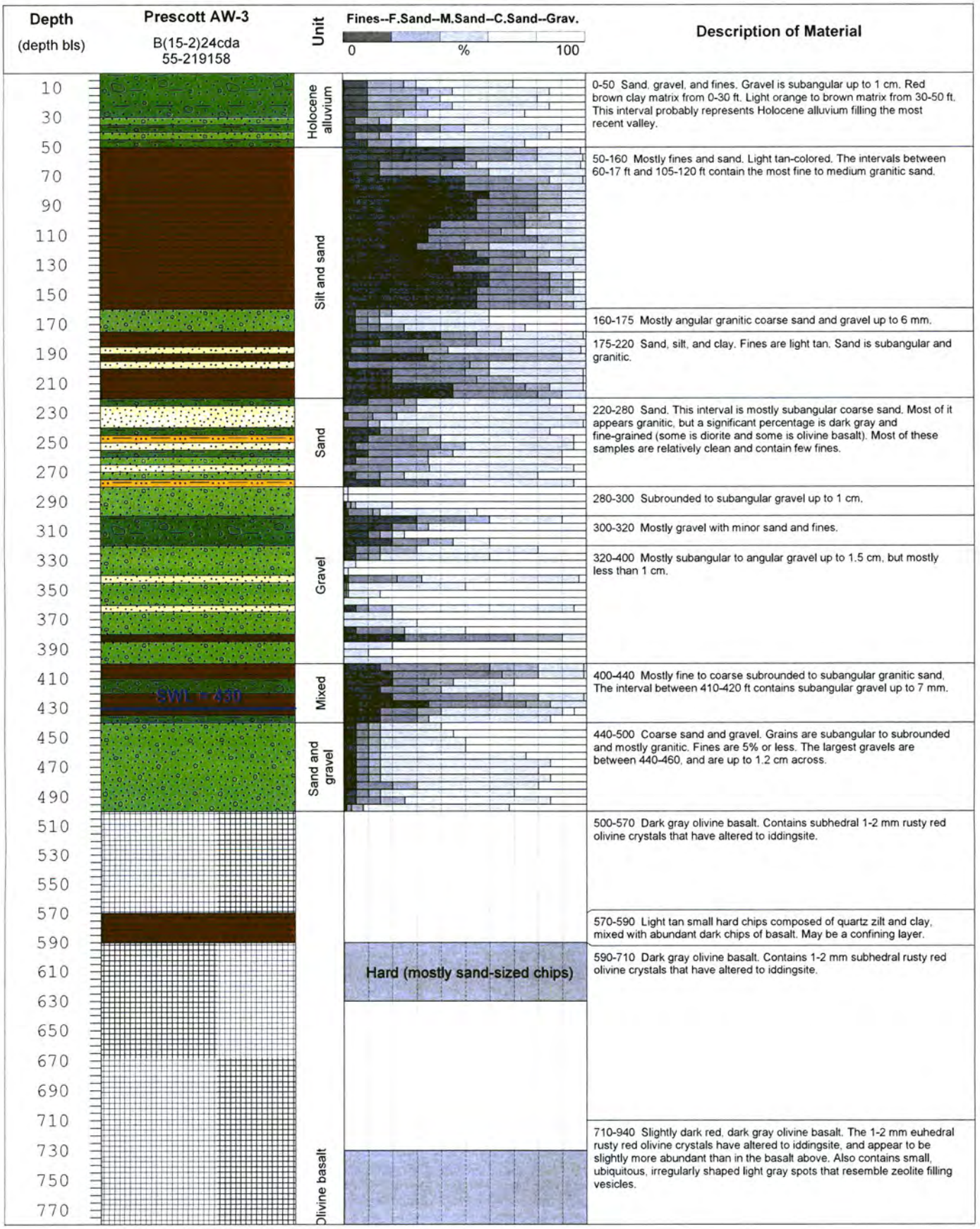
DEPTH FROM SURFACE		BOREHOLE DIAMETER (inches)
FROM (feet)	TO (feet)	
0	40	30
40	300	20
300	1100	16

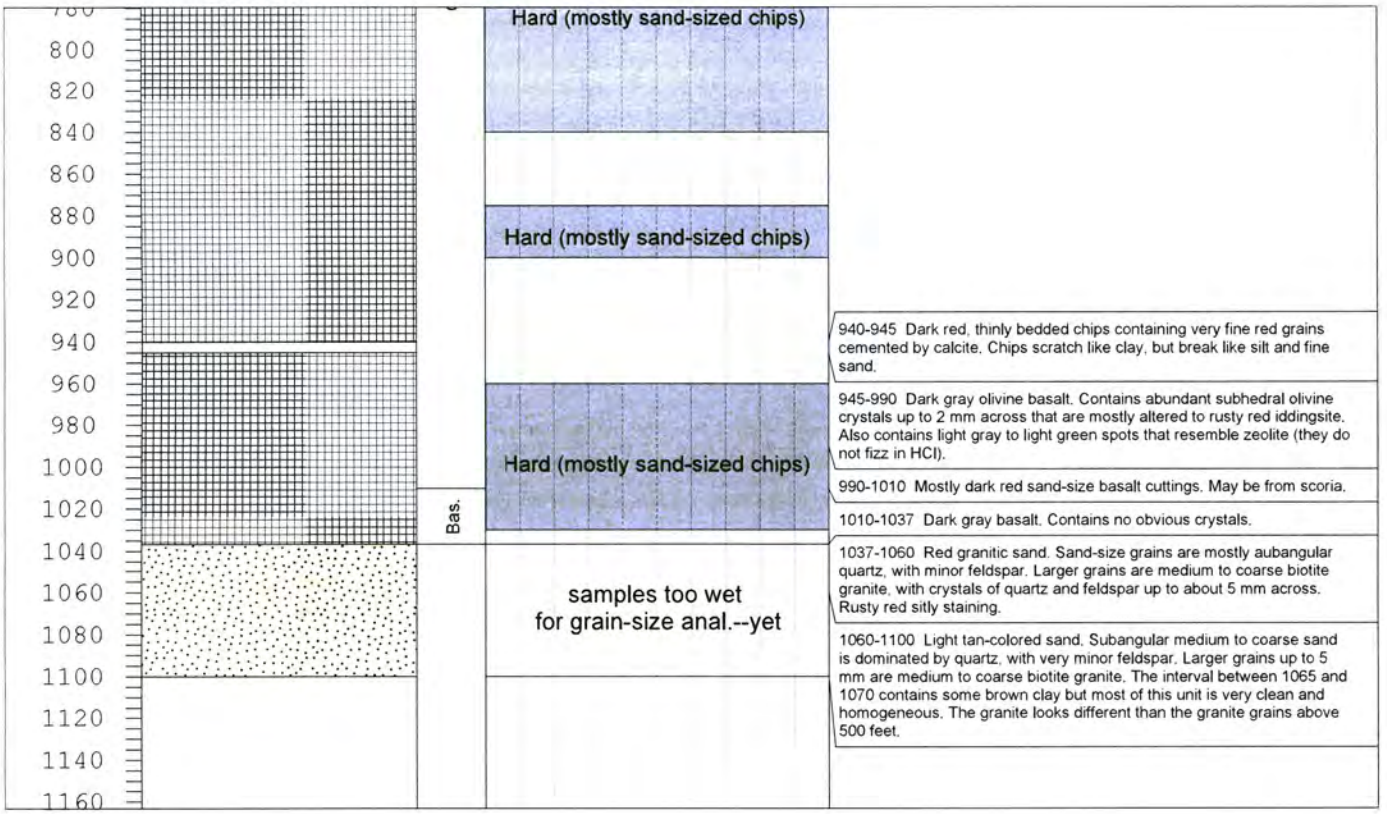
Installed Casing

DEPTH FROM SURFACE		OUTER DIAMETER (inches)	MATERIAL TYPE (T)				PERFORATION TYPE (T)						SLOT SIZE IF ANY (inches)
FROM (feet)	TO (feet)		STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	
+2	38	24	X			0.312"wall	X						
+2	300	20	X			0.312"wall	X						
+2	655	16	X			0.312"wall	X						
655	757	16	X			0.312"wall					X		1/8"x1"
757	810	16	X			0.312"wall	X						

Installed Annular Material

DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE (T)								FILTER PACK		
FROM (feet)	TO (feet)	NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	SAND	GRAVEL	SIZE
0	38			X								
38	810	X										


Depth
(depth bls)
Prescott AW-3
B(15-2)24cda
55-219158
Unit
Fines--F.Sand--M.Sand--C.Sand--Grav.
0
%
100
Description of Material
10
30
50
70
90
110
130
150
170
190
210
230
250
270
290
310
330
350
370
390
410
430
450
470
490
510
530
550
570
590
610
630
650
670
690
710
730
750
770
Holocene alluvium
Silt and sand
Sand
Gravel
Mixed
Sand and gravel
Olivine basalt
SWL = 430
Hard (mostly sand-sized chips)
0-50 Sand, gravel, and fines. Gravel is subangular up to 1 cm. Red brown clay matrix from 0-30 ft. Light orange to brown matrix from 30-50 ft. This interval probably represents Holocene alluvium filling the most recent valley.
50-160 Mostly fines and sand. Light tan-colored. The intervals between 60-17 ft and 105-120 ft contain the most fine to medium granitic sand.
160-175 Mostly angular granitic coarse sand and gravel up to 6 mm.
175-220 Sand, silt, and clay. Fines are light tan. Sand is subangular and granitic.
220-280 Sand. This interval is mostly subangular coarse sand. Most of it appears granitic, but a significant percentage is dark gray and fine-grained (some is diorite and some is olivine basalt). Most of these samples are relatively clean and contain few fines.
280-300 Subrounded to subangular gravel up to 1 cm.
300-320 Mostly gravel with minor sand and fines.
320-400 Mostly subangular to angular gravel up to 1.5 cm, but mostly less than 1 cm.
400-440 Mostly fine to coarse subrounded to subangular granitic sand. The interval between 410-420 ft contains subangular gravel up to 7 mm.
440-500 Coarse sand and gravel. Grains are subangular to subrounded and mostly granitic. Fines are 5% or less. The largest gravels are between 440-460, and are up to 1.2 cm across.
500-570 Dark gray olivine basalt. Contains subhedral 1-2 mm rusty red olivine crystals that have altered to iddingsite.
570-590 Light tan small hard chips composed of quartz zilt and clay, mixed with abundant dark chips of basalt. May be a confining layer.
590-710 Dark gray olivine basalt. Contains 1-2 mm subhedral rusty red olivine crystals that have altered to iddingsite.
710-940 Slightly dark red, dark gray olivine basalt. The 1-2 mm euhedral rusty red olivine crystals have altered to iddingsite, and appear to be slightly more abundant than in the basalt above. Also contains small, ubiquitous, irregularly shaped light gray spots that resemble zeolite filling vesicles.


780
800
820
840
860
880
900
920
940
960
980
1000
1020
1040
1060
1080
1100
1120
1140
1160
Bas.
Hard (mostly sand-sized chips)
Hard (mostly sand-sized chips)
Hard (mostly sand-sized chips)
samples too wet
for grain-size anal.--yet
940-945 Dark red, thinly bedded chips containing very fine red grains cemented by calcite. Chips scratch like clay, but break like silt and fine sand.
945-990 Dark gray olivine basalt. Contains abundant subhedral olivine crystals up to 2 mm across that are mostly altered to rusty red iddingsite. Also contains light gray to light green spots that resemble zeolite (they do not fizz in HCl).
990-1010 Mostly dark red sand-size basalt cuttings. May be from scoria.
1010-1037 Dark gray basalt. Contains no obvious crystals.
1037-1060 Red granitic sand. Sand-size grains are mostly aubangular quartz, with minor feldspar. Larger grains are medium to coarse biotite granite, with crystals of quartz and feldspar up to about 5 mm across. Rusty red sitly staining.
1060-1100 Light tan-colored sand. Subangular medium to coarse sand is dominated by quartz, with very minor feldspar. Larger grains up to 5 mm are medium to coarse biotite granite. The interval between 1065 and 1070 contains some brown clay but most of this unit is very clean and homogeneous. The granite looks different than the granite grains above 500 feet.

RECEIVED

JAN 28 2019

Arizona Department of Water Resources

Arizona Department of Water Resources
Information Management Unit
P.O. Box 33589 Phoenix, Arizona 85067-3589
(602) 771-8627 • (800) 352-8488
www.azwater.gov

Well Driller Report and Well Log

GJ

THIS REPORT MUST BE FILED WITHIN **30 DAYS** OF COMPLETING THE WELL.

PLEASE PRINT CLEARLY USING BLACK OR BLUE INK.

FILE NUMBER: **B(15-1)18 CDC**
WELL REGISTRATION NUMBER: 55-229228
PERMIT NUMBER (IF ISSUED): **S-229228**

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

Mail To:

NAME	DWR LICENSE NUMBER
Drill Tech, Inc.	298
ADDRESS: 3320 N. HIGHWAY 89	TELEPHONE NUMBER
CITY / STATE / ZIP: Chino Valley, AZ 86323	FAX

SECTION 2. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: City of Prescott
MAILING ADDRESS: 201 S. CORTEZ
CITY / STATE / ZIP CODE: PRESCOTT, AZ 86303
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: FAX:
WELL NAME (e.g., MW-1, PZ-3, Lot 25 Well, Smith Well, etc.):

Location of Well

WELL LOCATION ADDRESS (IF ANY): MELVILLE RD.

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
15N	01W	18	SW¼	SE ¼	SW ¼

LATITUDE			LONGITUDE		
° Degrees	' Minutes	"N Seconds	° Degrees	' Minutes	"W Seconds

METHOD OF LATITUDE/LONGITUDE (CHECK ONE)
☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade
LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level
METHOD OF ELEVATION (CHECK ONE)
☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade
*GEOGRAPHIC COORDINATE DATUM (CHECK ONE)
☐ NAD-83 ☐ Other (*please specify*):

COUNTY: YAVAPAI
ASSESSOR'S PARCEL ID NUMBER: BOOK 103 | MAP 01 | PARCEL 045

SECTION 3. WELL CONSTRUCTION DETAILS

Drill Method

CHECK ALL THAT APPLY
☑ Air Rotary
☐ Bored or Augered
☐ Cable Tool
☐ Dual Rotary
☐ Mud Rotary
☐ Reverse Circulation
☐ Driven
☐ Jetted
☐ Air Percussion / Odex Tubing
☐ Other *(please specify):*

Method of Well Development

CHECK ALL THAT APPLY
☑ Airlift
☐ Bail
☐ Surge Block
☐ Surge Pump
☐ Other *(please specify):*

Condition of Well

CHECK ONE
☑ Capped
☐ Pump Installed

Method of Sealing at Reduction Points

CHECK ONE
☐ None
☐ Packed
☐ Swedged
☐ Welded
☐ Other *(please specify):*

Construction Dates

DATE WELL CONSTRUCTION STARTED: 11/01/18
DATE WELL CONSTRUCTION COMPLETED: 12/15/18

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

SIGNATURE OF QUALIFYING PARTY: Martha Owens
DATE: 12/31/18

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55-229228

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILT) (attach additional page if needed)

Depth

DEPTH OF BORING	DEPTH OF COMPLETED WELL
896 Feet Below Land Surface	896 Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
393 Feet Below Land Surface	12/15/18		☐ Valve ☐ Other:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	39	42
39	401	28
401	896	22

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER DIAMETER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE IF ANY (inches)
0	39	30	X			.375	X						
0	401	24	X			.375	X						
0	380	18 5/8	X			.312	X					COPPER BEARING STEEL	
380	600	18 5/8	X			.312	X					HSLA	

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	39			X								

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55-229228

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	Description Describe material, grain size, color, etc.	Check (T) every interval where water was encountered (if known)
0	388	ALLUVIAL / SAND & CLAY	
388	875	BLACK & GRAY BASALT	450' 50 GPM
875	896	RED SAND & CLAY	600' 180 GPM 850' 1000+ GPM
		GPM 1000+	

STATE OF ARIZONA
DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

RECEIVED
MAY - 8 1991
OPERATIONS DIV.

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

1. Owner Steve Chontos
Name
HC 30 Box 915 Prescott AZ 86301
Mailing Address

2. Driller EDWARDSON DRILLING
P. O. Box 401
Chino Valley, AZ 86323
Name
Mailing Address

3. Location of well: T15N R2W Section 3 NE NE SE

4. Permit No. _____
(If issued)

DESCRIPTION OF WELL

5. Total depth of hole 560' ft.

6. Type of casing steel/plastic

7. Diameter and length of casing 7 in. from 0 to 20', 5 in from 5 to 560'.

8. Method of sealing at reduction points cemented

9. Perforated from 480 to 560' from ____ to ____, from ____ to ____.

10. Size of cuts 3/16" Number of cuts per foot 4

11. If screen was installed: Length ____ ft. Diam ____ in. Type ____

12. Method of construction drilled
drilled, dug, driven, bored, jetted, etc

13. Date started April 10 1991
Month Day Year

14. Date completed April 11 1991
Month Day Year

15. Depth to water 322' ft. (If flowing well, so state)

16. Describe point from which depth measurements were made, and give sea-level elevation if available ground level

17. If flowing well, state method of flow regulation: _____

18. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

REG. No. 55-530642

File No. B(15-2)3 daa

Entered _____ By _____

ENTERED MAY 14 1991

DWR-55-55-2/89

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
1	4	fill
4	8	caleachie
8	20	clay
20	65	sand/clay
65	90	black malapai
90	115	brown malapai
115	165	black malapai
165	175	red cinders
175	245	black malapai
245	490	red cinders
490	560	gray malapai
		FIRST WATER 420'

I hereby certify that this well was drilled by me (or under my supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

Driller EDWARDSON DRILLING
Name

P. O. BOX 401
Address

CHINO VALLEY, AZ 86323
City State Zip

054 47443

Date MAY 7 1981

DEPARTMENT OF WATER RESOURCES
15 South 15th Avenue
Phoenix, Arizona 85007

Registration No. 530642

File No. B(15-2)3 daa

MAY 13 1991

COMPLETION REPORT

1. Per A.R.S. §45-600, the Completion Report is to be filed with the Department within 30 days after installation of pump equipment by the registered well owner.
2. Drawdown of the water level for a non-flowing well should be measured in feet after not less than 4 hours of continuous operation and while still in operation and for a flowing well the shut-in pressure should be measured in feet above the land or in pounds per square inch at the land surface.
3. The static groundwater level should be measured in feet from the land surface immediately prior to the well capacity test.
4. 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 by measuring the natural flow at the land surface.

LOCATION OF THE WELL:

15 NORTH RANGE 2 WEST EAST HALF OF SECTION 3
Township Range Section ¼ ¼ ¼

EQUIPMENT INSTALLED:

Kind of pump Centrifugal - submersible
Turbine, centrifugal, etc.

Kind of power Electric H.P. Rating of Motor 5 H.P.
Electric, natural gas, gasoline, etc.

Pumping Capacity 35 Gallons per minute Date pump installed: 5/7/91

WELL TEST:

Test pumping capacity 90 Gallons per minute Date Well Tested: 4/10/91

Method of Discharge Measurement orifice
Weir, orifice, current meter, etc.

Static Groundwater Level 324' ft. Drawdown ft.

Total Pumping Lift 400' ft. Drawdown lbs.
(Flowing Well)

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

5/10/91, 19
Date

Steve Chontos
Print Well Owner's Name

Steve Chontos
Signature of Well Owner or Agent

HC30 Box 915
Address

Prescott AZ 86301
City State Zip

DWR-55-56-2/88

ENTERED MAY 14 1991

Arizona Department of Water Resources Memorandum

Date: 08/10/01
To: Greg Wallace
From: Frank Corkhill

Subject: Preliminary summary of the results of drilling two monitor wells in the Prescott AMA.

This memo describes the activities and preliminary results of the Department's recent monitor well drilling project in the Prescott AMA.

Background

The plan to drill up to three monitor wells was proposed and evaluated by ADWR Hydrology and Prescott AMA staff during the spring and summer of 2000. The drilling project was identified as an important component of the overall plan to improve groundwater monitoring and hydrogeologic data collection in the Prescott AMA (ADWR, 2001). The monitor wells were drilled during June and July of 2001 by the Del Rio Drilling and Pump Company of Chino Valley, Arizona under the authority of State Procurement Office Contract #AD010207.

The original plan called for the drilling and logging (geologic and geophysical) of up to 3 monitor wells, however higher than anticipated drilling costs precluded the drilling of the third well. The well sites are located in the Little Chino sub-basin of the Prescott AMA on State Trust land (Figure 1). The sites were acquired from the State Land Department under Right-of-Way lease number # 18-106000. The cost of the 10-year right-of-way lease for the three well sites was about $6,500. The well sites were selected in data deficient areas of the regional aquifer system where the aquifer thickness and hydrologic characteristics were comparatively unknown.

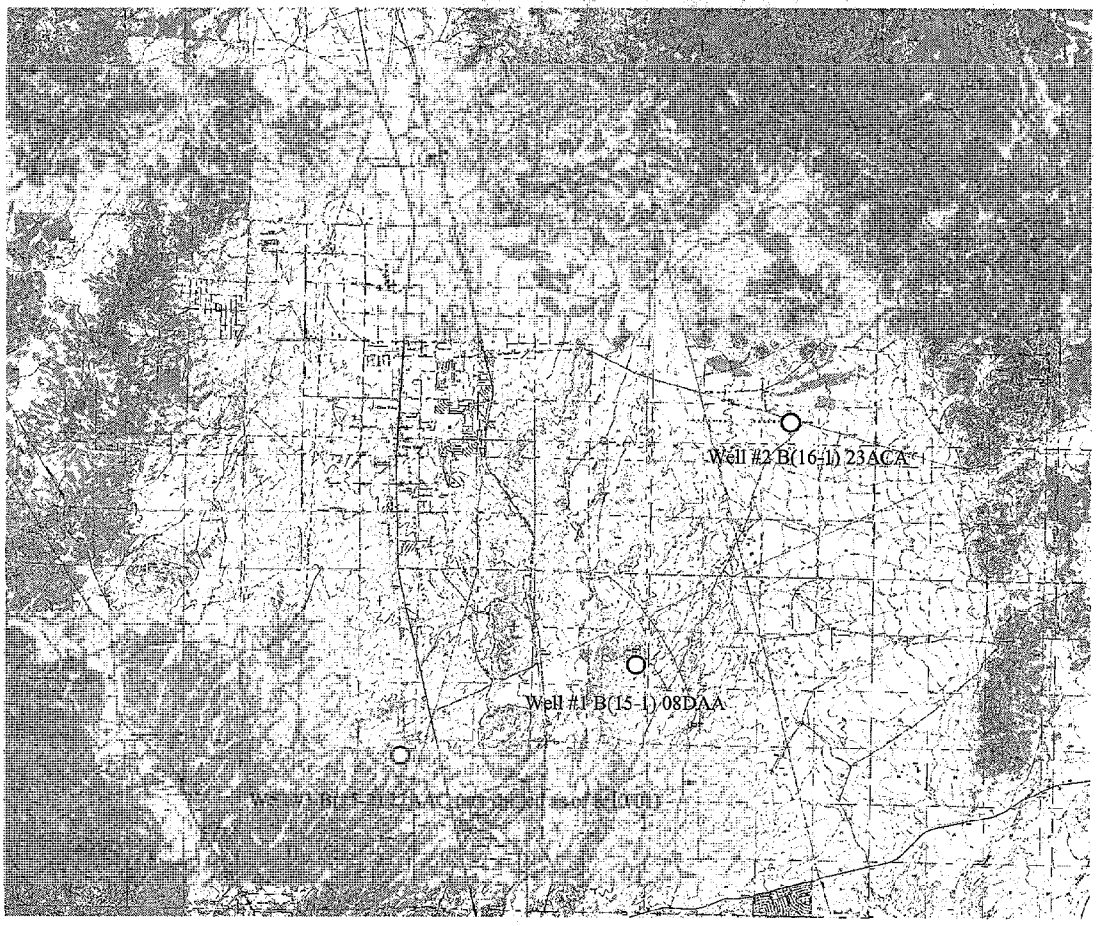


Figure 1 Location of ADWR monitor well drilling sites in the Prescott AMA

ADWR-Prescott AMA Monitor Well #1 B(15-01) 08DAA (55-587403)

Drilling operations on ADWR-Prescott AMA Monitor Well #1 began during the week of June 11, 2001. Conventional air rotary drilling operations were conducted by Del Rio Drilling & Pump using a Port-a-drill TLS-532 top head drive rig with a rated depth of 3,000 feet (Figure 2). Other equipment used by Del Rio included a pipe truck, a high-capacity 250 PSI air compressor and a 5,000 gallon water truck. Del Rio conducted a daylight hours drilling operation using a two-man crew. Drilling supervision and oversight was provided by Bill Remick of the ADWR Hydrology Division with assistance from Caryl Walti and Jack McCormack of the Prescott AMA. Mr. Remick collected and analyzed drill cuttings and generally provided instructions and recommendations to Del Rio concerning the drilling operations.

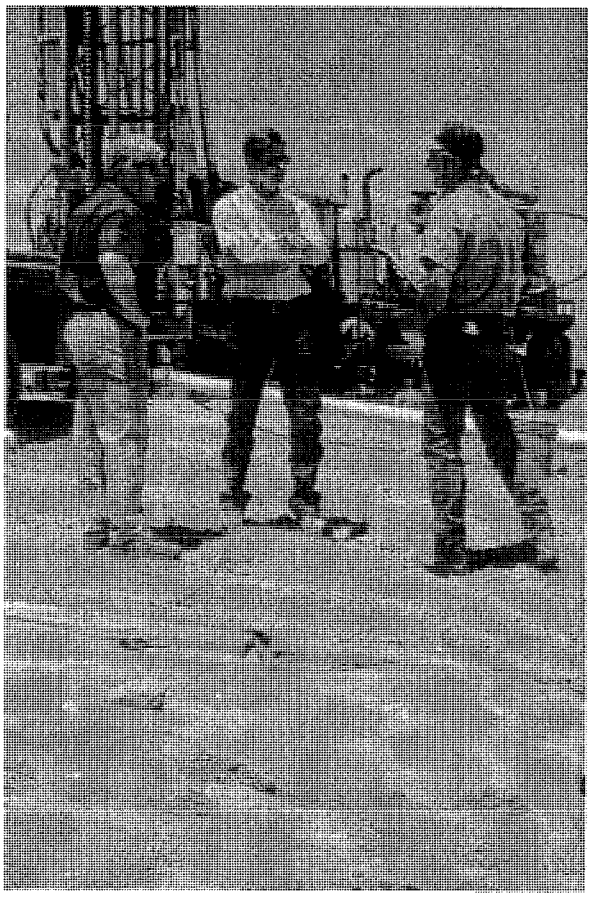


Figure 2 ADWR Director Joseph C. Smith (left) and Prescott AMA Director Jim Holt (center) confer with Del Rio driller Leon Bonner (right) during a drill site inspection to Monitor Well #1, B(15-1) 08DAA. Drill cutting samples are assembled on plastic tarp in foreground.

The drilling objective for ADWR-Prescott AMA Monitor Well #1 was to drill an 8 inch diameter borehole to a depth of 1,000 to 1,200 feet below land surface (BLS) or to hydrologic bedrock, whichever came first. Preliminary estimates of geologic conditions, aquifer thickness and the depth to bedrock were provided from Krieger (1966), Corkhill and Mason (1995) and Oppenheimer and Sumner (1980). Based on these sources it was originally believed that the Upper Alluvial Unit (UAU) would be encountered from the land surface down to a depth of about 935 feet BLS. At least 200 feet of productive volcanic deposits, the Lower Volcanic Unit (LVU), were believed to underlie the UAU at the well location. It was anticipated that groundwater would to be encountered at a depth of about 390 feet BLS.

As drilling operations commenced it soon became apparent that actual geologic conditions were substantially different than those that were anticipated. Based on the preliminary interpretation of drill cuttings the geologic log of the well shows that unconsolidated soils and sands were encountered to a depth of about 55 feet BLS (Table 1). Interbedded volcanic flows and cinder beds were encountered between 55 and 695 feet BLS. Some zones of hard (slow) drilling were encountered through this depth interval, however drilling rates often averaged 30 to 40 feet per hour. Groundwater was encountered between 375 and 400 feet BLS, the static water level in the well stabilized at about 374 feet BLS. Sands, gravels and conglomerate were encountered from 694 to about 810 feet BLS (Table 1). Groundwater inflow to the well increased with increasing well depth. The driller estimated the water production level at about 300 gpm. Schist fragments, granitic material and slow drilling conditions were encountered at a depth of about 810 feet BLS. The well was drilled to a total depth of 840 feet.

Once drilling was completed the borehole was geophysically logged on June 18, 2001 by Mr. Raymond Federwisch with Geophysical Logging Services of Chino Valley, Arizona. Before logging commenced the borehole was cleaned out to the maximum extent possible by running the drill pipe to near the bottom of the hole and circulating for about an hour. Due to the fact that unstable, sloughing borehole conditions were noted during drilling it was decided to run the neutron, density and gamma ray logs through the drill pipe before the drill pipe was pulled from the hole. Following this procedure it was realized that the data from the neutron and density logs would have limited quantitative usefulness, however post-processing of these data with selected lithologic sample information may enhance the interpretation of these data.

After the drill pipe was pulled from the borehole the following logs were run under open hole conditions: temperature, natural gamma ray, caliper, spontaneous potential, 16 and 64 inch normal, 12 inch lateral, and sonic. Unfortunately, during the logging operations it was discovered that the borehole had filled in with about 20 feet of debris, consequently all logs (both cased hole and open hole) had a first reading depth of about 810 feet. The geophysical logs generally confirmed the interpretations of contact depths and the depth to water provided from the drill cuttings. However, the fill in the hole made it impossible to log opposite the contact between the schist/granitic zone and the overlying sands, gravels and conglomerate.

The well was completed during the week of June 18, 2001. The casing completion schedule is shown in Figure 3. Blank 8.62 inch OD steel surface casing was set and cemented from +1 to 36 feet BLS. Blank 4.5 inch OD steel casing was installed in the intervals from +1 to 692 feet and 812 to 832 feet BLS. Slotted 4.5 inch OD steel casing was set from 692 to 812 feet BLS. A blank, open-ended 1 inch ID galvanized pipe was set in the annular space between the borehole wall and the 4.5 inch OD steel casing from +1 to 504 feet BLS. The well was secured with a locking steel cap. The well was gravel packed from 635 to 829 feet BLS. A bentonite seal was set from 602 to 635 feet BLS. Personnel from the ADWR Field Services Division later welded a steel plate to seal the annular space between the outer casing and the inner casings.

The decision to complete the well as a dual-point monitoring well was made in recognition of the fact that there might be a measurable vertical hydraulic gradient between the shallower and deeper portions of the aquifer. However, one set of water level measurements conducted since the completion of the well have shown no measurable difference between the shallow and deeper zones (Remick, 2001). It should be mentioned that it is uncertain whether the current 33 foot thick bentonite seal actually seals the well annulus across a contact between two separate aquifer units that have differing hydraulic head. Therefore, a plan to thicken the bentonite seal by pouring additional bentonite pellets through the 1 inch galvanized pipe (this was the original "tremmie" pipe used to install the gravel pack and bentonite pellets) has been discussed, however it is undecided whether this will be attempted.

Once the well was completed the drill cuttings were hauled away from the well site. The site was then graded and native seed was spread to restore the site to its original condition. Personnel from the ADWR Field Services Division have subsequently visited the site and poured a concrete pad. A clamshell shelter and pressure transducer monitoring equipment will be installed in the near future. The total cost charged by Del Rio to drill Monitor Well #1 was $42,996.

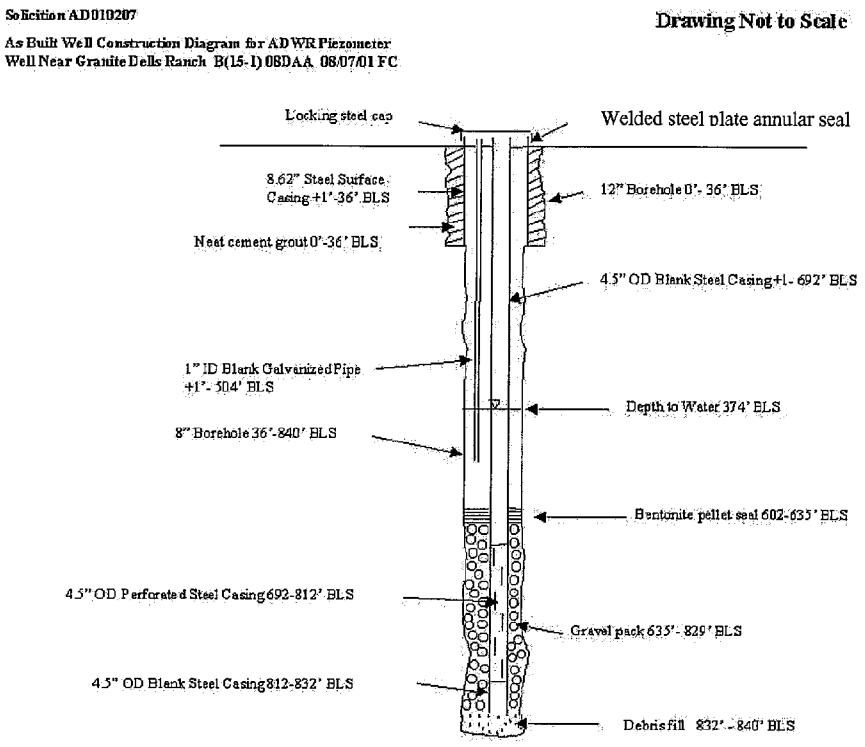


Figure 3 As-built well construction drawing for B(15-1) 08DAA

Interval Top Feet (BLS)	Interval Bottom Feet (BLS)	Description
0	32	Soils
32	55	Clayey, very fine sand
55	580	Basalt flows and cinders (water level 374') lots of water below 374' ~ 300 gpm
580	604	Tuff ?
604	685	Cinders and basalt flows
685	695	Hard basalt flow
695	808	Sand and gravel, basal conglomerate? (more water ?)
808	840	Schist fragments and granitic material

Table 1 Preliminary geologic log based on field interpretation of drill cuttings B(15-1) 8DAA

ADWR-Prescott AMA Monitor Well #2 B(16-01) 23ACA (55-587404)

Drilling operations on ADWR-Prescott AMA Monitor Well #2 began during the week of June 25, 2001. Conventional air rotary drilling operations were conducted by Del Rio Drilling & Pump using a Port-a-drill TLS-532 top head drive rig with a rated depth of 3,000 feet. Other equipment used by Del Rio included a pipe truck, a high-capacity 250 PSI air compressor and a 5,000 gallon water truck. Del Rio conducted a daylight hours drilling operation using a two-man crew. Drilling supervision and oversight was provided by Bill Remick of the ADWR Hydrology Division with assistance from Caryl Walti and Jack McCormack of the Prescott AMA. Mr. Remick collected and analyzed drill cuttings and generally provided instructions and recommendations to Del Rio concerning the drilling operations.

The drilling objective for ADWR-Prescott AMA Monitor Well #2 was to drill an 8 inch diameter borehole to a depth of 1,000 to 1,200 feet below land surface (BLS) or to hydrologic bedrock, whichever came first. Preliminary estimates of geologic conditions, aquifer thickness and the depth to bedrock were provided from Krieger (1966), Corkhill and Mason (1995) and Oppenheimer and Sumner (1980) Based on these sources it was originally believed that the Upper Alluvial Unit (UAU) would be encountered from the land surface down to a depth of about 405 feet BLS. At least 200 feet of productive volcanic deposits, the Lower Volcanic Unit (LVU), were believed to underlie the UAU at the well location. It was anticipated that groundwater would be encountered at a depth of about 330 feet BLS.

As with the first well, the drill cuttings indicated different geologic conditions than those that were anticipated. Based on the preliminary interpretation of drill cuttings the geologic log of the well shows that unconsolidated soils and gravels were encountered to a depth of about 112 feet BLS (Table 2). A basalt layer was encountered between 112 and 135 feet BLS. An interval composed mainly of volcanic cinders was penetrated from 135 to 260 feet BLS. Basalt was encountered from 260 to 380 feet BLS. A burned gravel and/or tuff zone was found from 380 to 430 feet BLS. Sands and gravels were encountered from 430 to 590 feet BLS. Fragments of granitic material and hard drilling conditions were encountered from 590 feet BLS to the bottom of the borehole at 654 feet BLS (Table 2). Drilling conditions varied with some zones drilling with comparative ease at 30 to 40 feet per hour, and other zones drilling at about 10 feet per hour or less. Groundwater was encountered somewhere in the depth interval between 400 and 420 feet BLS, the static water level in the well stabilized at about 342 feet BLS. Groundwater inflow to the well increased with increasing well depth. The driller estimated the water production level to exceed 200 gpm (Figure 4).

Once drilling was completed the borehole was geophysically logged on July 9, 2001 by Mr. Raymond Federwisch with Geophysical Logging Services of Chino Valley, Arizona (Figure 5). Before logging commenced the borehole was cleaned out to the maximum extent possible by running the drill pipe to near the bottom of the hole and circulating for about an hour. Due to the fact that unstable, sloughing borehole conditions were noted

during drilling it was decided to run the gamma ray log through the drill pipe before the drill pipe was pulled from the hole. Following this procedure assured the collection of at least some geophysical data across the estimated contact between the granite and overlying alluvial material near the bottom of the borehole.

After the gamma ray log was run the drill pipe was pulled and the following logs were run under open hole conditions: temperature, natural gamma ray, caliper, spontaneous potential, 8, 16, 32 and 64 inch normal, sonic, density, neutron and 3D image. The geophysical logs generally confirmed the interpretations of contact depths and the depth to water provided from the drill cuttings. However, the borehole filled or bridged after the drill pipe was removed from the well, and consequently the open hole logs were only run above a depth of about 513 feet BLS.

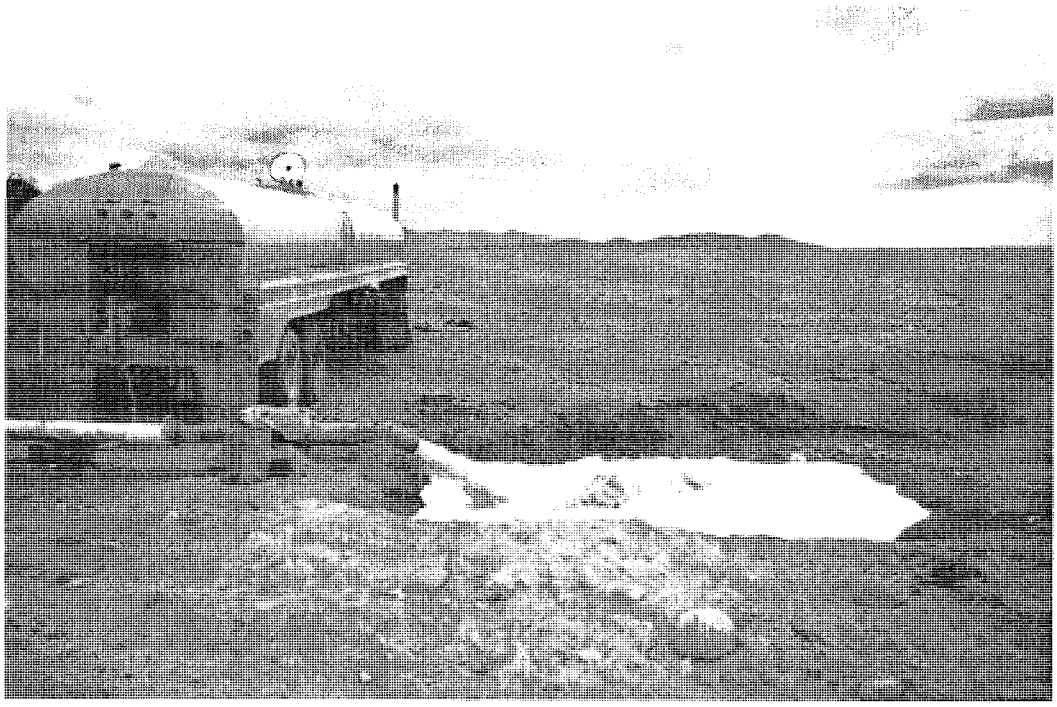


Figure 4 Water production from well B(16-1) 23ACA

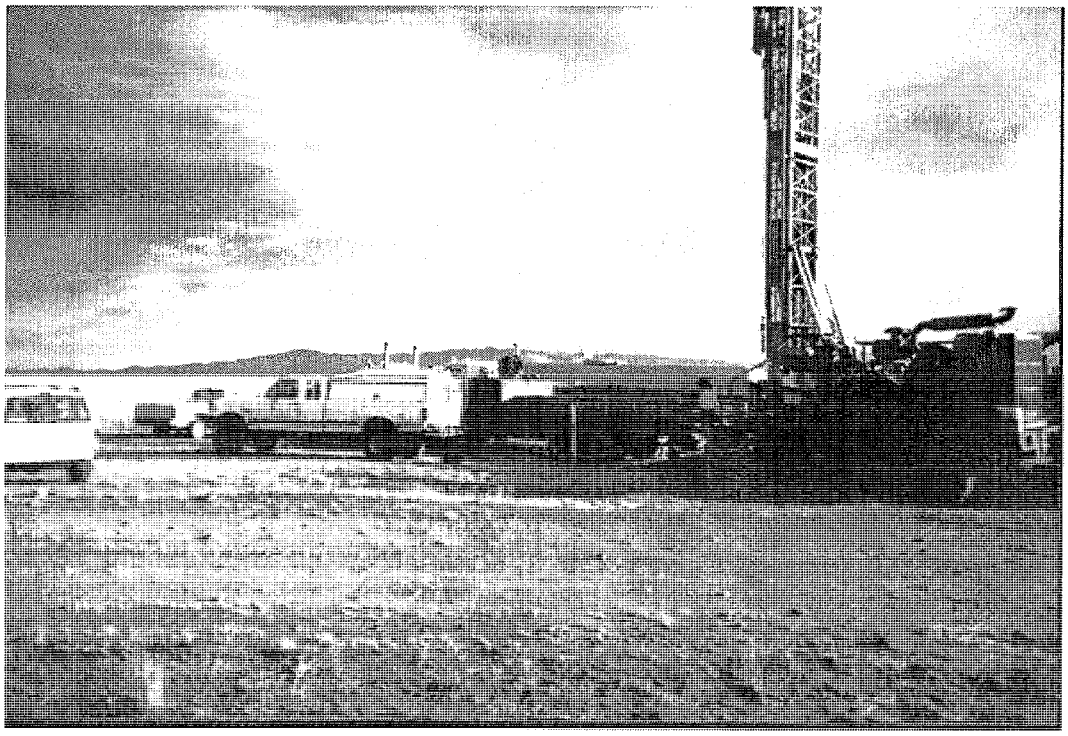


Figure 5 Geophysical Logging Services logging truck on site at well B(16-1) 23ACA

The well was completed during the week of July 16, 2001. Several attempts were made to clean out the borehole to its original drilled depth, however these attempts failed due to the continued sloughing of material from the borehole wall in the lower portion of the well. The casing completion schedule is shown in (Figure 6). Blank 10.75 inch OD steel surface casing was set and cemented from +1 to 20 feet BLS. Blank 4.5 inch OD steel casing was installed in the intervals from +1 to 413 feet BLS, 423 to 433 feet BLS, 443 to 453 feet BLS, 463 to 483 feet BLS and 493 to 503 feet BLS. Stainless steel well screen (4.5 inch OD) was set in the intervals from 413 to 423 feet BLS, 433 to 443 feet BLS, 453 to 463 feet BLS and 483 to 493 feet BLS. The annular space between the outer casing and the inner casings was sealed with a welded steel plate. The well was secured with a locking steel cap. The well was sand packed from 417 to 504 feet BLS.

Once the well was completed the drill cuttings were hauled away from the well site. The site was then graded and native seed was spread to restore the site to its original condition. Personnel from the ADWR Field Services Division have subsequently visited the site and poured a concrete pad. A clamshell shelter and pressure transducer monitoring equipment will be installed in the near future. The total cost charged by Del Rio to drill Monitor Well #2 was $34,470.

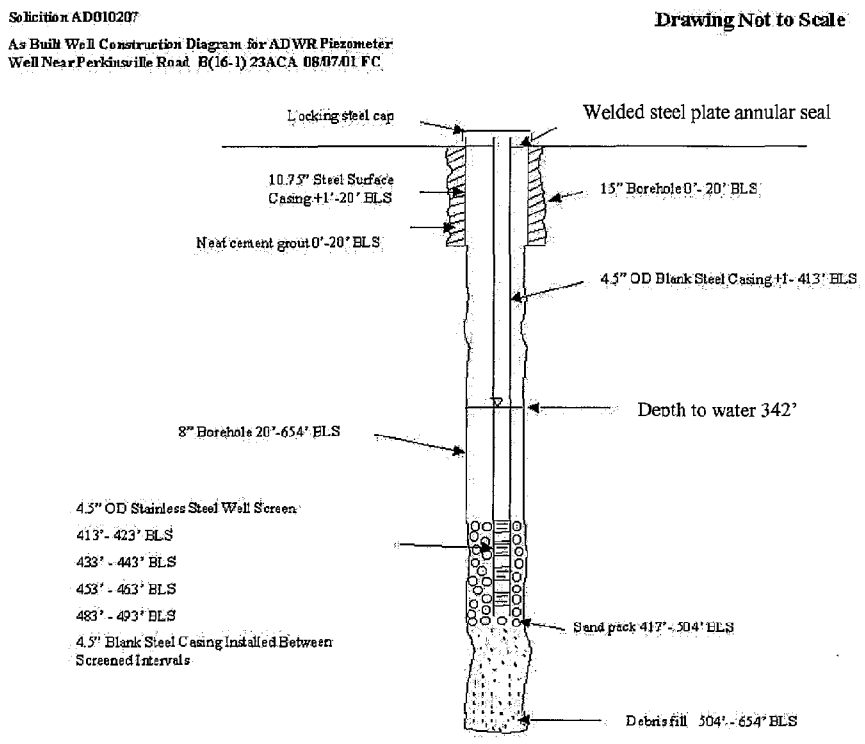


Figure 2 As-built well construction drawing for B(16-1) 23ACA

Interval Top Feet (BLS)	Interval Bottom Feet (BLS)	Description
0	112	Clayey gravel
112	135	Basalt
135	260	Mostly cinders
260	380	Basalt flow
380	400	Burned gravel or tuff
400	430	Tuff-like
430	440	Sand
440	450	¼" pebbles
450	485	Coarse –fine sand
485	496	Green Material? – very soft pebbles, cemented
496	590	Red sand - purplish color ~ 40 min/rod
590	620	Brownish color – no rounded fragments ~1 hour/rod (monzonite)
620	640	Brownish color – no rounded fragments ~2 hour/rod (monzonite)
640	654	Brownish color – no rounded fragments some biotite ~ 2.75 hour/rod (monzonite)

Table 2 Preliminary geologic log based on field interpretation of drill cuttings B(16-1) 23ACA

Summary

During June and July, 2001 the ADWR completed the drilling of two groundwater monitor wells in the Prescott AMA. The wells were drilled on State Trust lease lands. The total cost to obtain well site leases and drill the wells was about $84,000. The well locations were selected in data deficient areas of the regional aquifer system where the aquifer thickness and hydrologic characteristics were comparatively unknown.

The first well, B(15-1) 08DAA, penetrated primarily volcanic deposits and produced groundwater at an estimated rate of 300 gpm during drilling. Granitic material, schist fragments and hard drilling conditions were encountered at a depth of 808 feet BLS, the well was drilled to a total depth of 840 feet BLS. The well was completed with multiple casing strings to monitor shallow and deep water levels.

The second well, B(16-1) 23ACA, penetrated primarily volcanic flow deposits and cinders to a depth of 430 feet BLS. Sand, gravel and conglomerate were found below the volcanic formations to a depth of 590 feet BLS. Granitic material (monzonite) was encountered from 590 to 654 BLS. The well was drilled to a total depth of 654 feet BLS. The well was completed with a single casing string to monitor water levels.

Future activities that are planned include the installation of shelters and pressure transducer equipment in the wells. Water quality samples will be obtained from the wells in the near future. More detailed analyses of the drill cuttings and geophysical well logs is also planned. The lithologic information provided in this memo and from subsequent analyses will be provided to the Modeling Section for the future model updates.

The monitor well drilling project has provided much new valuable information on the subsurface geology and hydrology of the regional aquifer system. We have also learned many practical lessons regarding drilling methods and procedures that we should consider in future activities. For example, if the third well is drilled we might want to look at the comparative costs for drilling air and mud rotary holes, since hole stability problems were encountered on both of the wells that were drilled. Of course the use of mud rotary drilling would introduce the potential for lost circulation problems, so that possibility would also need to be considered. Another activity that might be considered for future drilling activities is the possibility of obtaining core samples from the bottom portion of the well, this would be important information that would confirm the interpretation of bedrock conditions. Finally, the possibility of using PVC casing should be considered for future drilling projects (if conditions are appropriate).

CC Joe Smith, Jim Holway, Jim Holt, Bill Remick

References

ADWR, 2001, Prescott Active Management Area 2000-2001 Hydrologic monitoring Report, 32 p.

Corkhill E.F., and Mason D.A, 1995, Arizona Department of Water Resources Hydrology and Simulation of Groundwater Flow Prescott Active Management Area Yavapai County, Arizona, Modeling Report No. 9, 143 p.

Krieger, M.H., 1965, Geology of the Prescott and Paulden Quadrangles, Arizona, USGS Professional Paper 467, 127 p.

Oppenheimer, J.M., and Sumner, J.S., 1980, Depth-to-Bedrock Map (Prescott), Lab of Geophysics, University of Arizona, Tucson, Arizona.

Remick, 2001. Personal communication concerning water level measurements made at B(15-1) 08DAA.

ARIZONA DEPARTMENT OF WATER RESOURCES
500 North 3rd Street
Phoenix, Arizona 85004

#3

WELL DRILLER REPORT

This report should be prepared by the driller in all detail and filed with the Department within 30 days following completion of the well.

RECEIVED
DEC 14 2001
RECORDS MGT

1. DEL RIO DRILLING & PUMP, INC.
6645 NORTH HIGHWAY 89
CHINO VALLEY, AZ 86323-9154

2. Owner Name: AOWR
Address: 500 N. 3rd St. Phoenix Az. 85004
City State Zip

3. Location: 15 (N)/S 2 E/(W) 22 ¼ NW ¼ NE ¼ NE
Township Range Section 10-acre 40-acre 160-acre

4. Well Registration No. 55-588619 (Required)

5. Permit No. _____ (If Issued)

DESCRIPTION OF WELL

6. Total depth of hole 1240' ft.
7. Type of casing Steel/PVC
8. Diameter and length of casing 10 in. from 0 to 20, 4 PVC in from -0- to 550'
9. Method of sealing at reduction points _____
10. Perforated from 550' to 830', from Alternating to _____ from _____ to _____
11. Size of cuts Factory Number of cuts per foot _____
12. If screen was installed: Length _____ ft. Diam _____ in. Type _____
13. Method of construction Drilled
(drilled, dug, driven, bored, jetted, etc)
14. Date started 09 10 01
Month Day Year
15. Date completed 10 31 01
Month Day Year
16. Depth to water 264' ft. (If flowing well, so state)
17. Describe point from which depth measurements were made, and give sea_level elevation if available
_____
18. If flowing well, state method of flow regulation: _____
19. Remarks: _____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD
Registration No. 55- 588619
File No. B(15-2) 22 AAB
Received _____ By _____
Entered _____ By _____

DWR-55-55-7/95 (Rev.)

ENTERED DEC 14 2001

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	10	Soil w/some sand & small Gravel
10	55	Clay w/ some gravels
55	415	Clay w/ some sand & gravel
415	520	Clay & Cemented sand & conglomerate.
520	685	Clay w/some sand & gravel
658	705	Clay
705	720	Soft granite conglomerate
720	770	Clay w/ soft granit cong.
770	785	Clay
785	800	Soft granite cong.
800	1080	Clay with soft granite cong.
1080	1240	Clay w/ some soft granit cong.
		Possibly Cemented Sand layers.
		Also some hard spots - possibly
		rocks varying from 6 to 18" in size.

I hereby certify that this well was drilled by me (or under by supervision), and that each and all statements herein contained are true to the best of my knowledge and belief.

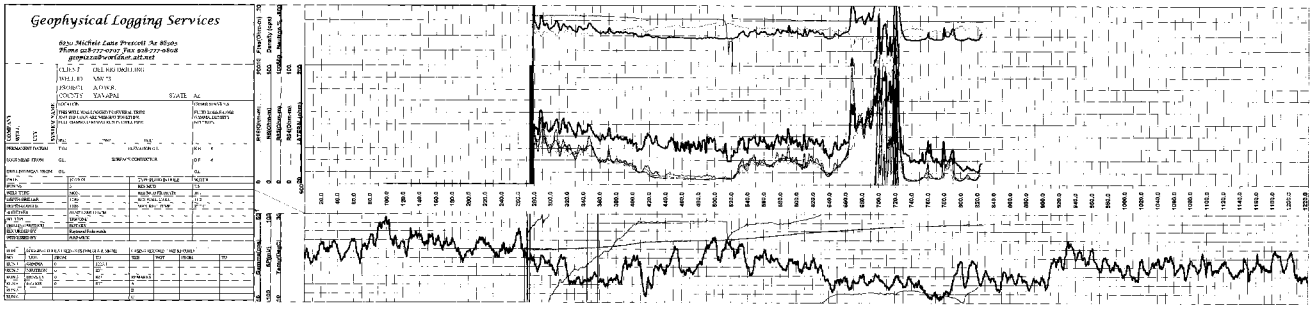
Driller Name: DEL RIO DRILLING & PUMP, INC.

6645 NORTH HIGHWAY 89
Street

CHINO VALLEY, AZ 86323-9154
City State Zip Phone No.

Signature of Driller

11/2/01
Date


Geophysical Logging Services

Run Date: 07/25/2000

AZ DEPARTMENT OF WATER RESOURCES

WELL REGISTRY REPORT - WELLS55

Location B 17.0 2.0 22 A B B

Well Reg.No 55 - 606020

AMA PRESCOTT AMA

Name PRESCOTT, CITY OF,
PO BOX 2059

PRESCOTT AZ 86302

File Type REGISTERED WELL
Application/Issue Date 04/12/1982

Owner OWNER
Driller Nbr 98
Driller Name MOSS WEBER, INC.
Driller Phone
County YAVAPAI
Intended Capacity GPM 402.00

Well Type NON-EXEMPT
SubBasin NO SUBBASIN
Watershed VERDE RIVER
Water Uses MUNICIPAL
Well Uses CAPPED
Discharge Method NONE
Power NO POWER CODE LISTED

Well Depth	880.00	**Case Diam**	10.00	**Tested Cap**	500.00
Pump Cap.	500.00	**Case Depth**	880.00	**CRT**	X
Draw Down	145.00	**Water Level**	25.00	**Log**	X
		Acres Irrig	0.00	**Finish**	STEEL - PERFORATED OR SLOTTED CASING

Comments ASLD 35-41452. NOID FILED WITH ASLD ON 12/7/76 FOR A MUNICIPAL SUPPLY WELL FOR THE CITY OF PRESCOTT (COP). DRILLING AUTHORITY ISSUED TO MOSS-WEBER, INC. (ADWR LIC. NO. 98) ON 12/9/76. ON 11/20/80, FRANK TUREK, P.G. OF W.S. GOOKIN & ASSOCIATES, FILED COPIES OF THE IN-HOUSE WELL DRILLERS REPORT AND FINAL WELL PUMP TEST REPORT WHICH WERE COMPILED BY MOSS WEBER, INC. IN 1977. ACCORDING TO THE DRILLERS REPORT, THIS WELL WAS DRILLED TO A DEPTH OF 880-FEET WITH 20-INCH DIA. STEEL CASING INSTALLED FROM 0-50 FEET, 12-INCH DIA. STEEL CASING FROM 0-470 FEET, AND 10-INCH DIA. STEEL CASING FROM A DEPTH OF 455 FEET TO T.D. CASING(S) WERE PERFORATED FROM 50-870 FEET WITH TEN 3-1/2"x3/16" CUTS PER FOOT FROM 465-870 FEET. AT THE TIME OF MR. TUREK'S REPORT, PUMP EQUIPMENT HAD NOT BEEN INSTALLED. THE PUMP TEST WHICH HAD BEEN PERFORMED IN JUNE OF 1977 REPORTED THAT THE WELL WAS CAPABLE OF PRODUCING 503-GPM ALTHOUGH THE WELL WAS "NOT STABLE AFTER 20 HOURS OF PUMPING AT 500-GPM." ON 4/12/82, COP REGISTERED THIS WELL WITH ADWR AND 55-606020 WAS ASSIGNED. ACCORDING TO THE REGISTRATION FORM, THIS WELL WAS CAPPED. ON 4/26/00, 35-41452 & 55-606020 WERE MERGED. MIB

Places Of Use

1 B 17 0 2 0 22

Current Action

11/20/80	805	COMPLETION REPORT RECEIVED

Action History

11/20/80	750	WELL LOG RECEIVED
6/14/77	755	WELL CONSTRUCTION COMPLETED
6/1/77	755	WELL CONSTRUCTION COMPLETED
12/9/76	550	DRILLING AUTHORITY ISSUED
12/7/76	150	NOI RECEIVED FOR A NEW PRODUCTION WELL

W. S. GOOKIN & ASSOCIATES
ENGINEERS • HYDROLOGISTS • PLANNERS • SURVEYORS
4203 NORTH BROWN AVENUE
SCOTTSDALE, ARIZONA 85251
(602) 947-3741

W. S. GOOKIN, P.E., PRESIDENT
W. SCUDDER GOOKIN, P.E., VICE PRESIDENT
FRANK S. TUREK, M.S., R.G., VICE PRESIDENT
T. ALLEN J. GOOKIN, P.E., TREASURER

Our File No. 140A

November 19, 1980

55 606020

Mr. Bob Smith
Arizona Department of Water Resources
222 North Central Avenue
Suite 800
Phoenix, Arizona 85004

B(17-2)22 DAA AMS

Dear Mr. Smith:

Enclosed is a copy of the Driller's Report from Moss Weber Inc. for the well which they drilled for the City of Prescott. The well is located in Township 17 North, Range 2 West, Section 22, A, B, and D.

You stated the well had been placed in the cancel file because all of the necessary information had not been received. The attached data should contain all of the necessary information to have the well placed in the active file.

There is no equipment record because the City of Prescott has not connected this well to their system and thus no pump, motor or pipeline has been installed.

If you need any additional information concerning this well, please contact our office.

Sincerely,

W. S. GOOKIN & ASSOCIATES

Frank S. Turek

Frank S. Turek
Registered Geologist

FST:jd

Enclosures

ENT'D

MOSS-WEBER INC.

THIS REPORT MUST BE CAREFULLY KEPT DURING THE DRILLING OF WELL AND DELIVERED TO OFFICE IMMEDIATE COMPLETION OF WELL, CHECK CAREFULLY; GIVE INFORMATION CONCERNING THE WELL, INCLUDING FISHING PIPE, LOST TOOLS OR HOLE.

Customer CITY OF PRESCOTT

Mailing Address CITY HALL P.O. BOX 2059 PRESCOTT ARIZONA Z.C. 86301

Job Number 47-59-813

Give location of well and distance in miles from some prominent point or place. Such as road, lateral, street or avenue. Give legal d by placing dot on map, space is provided below for this essential information.

Location of Well.

Section No. 22

Range No. 2W

Township No. 17N

Well No. 55 606020

Location in Miles from some point.

.....

.....

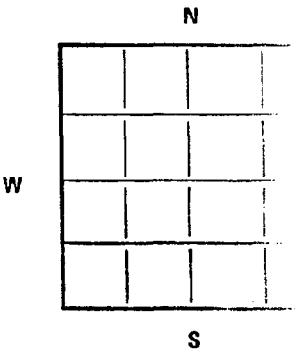
.....

.....

.....

.....

Legal Description - Put Do



Rig No. 47 Well No. Give size of tool collars for fishing purposes.

Date rig set on job 11-15-76

Date Job Finished 6-14-77 Rope socket neck 1 1/8

Number of days on job

Average ft. per day Collar of jars 5 7/16

Size of casing	Am't	Top	Bottom
~~30~~ 20" - 1/4	50'	0	50'
12	470'	0	470'
10	426'	455	880

Collar of stem 5 7/16

Collar of bit 7"

Size of bailer 9"

Standing water level from surface 24'

Total depth of well 880'

Total amount of casing

Was drive shoe used Yes

Top of perforations 50'

Bottom of perforations 870'

No. of perforated holes per ft. 10 Hole around

Size of perforations

Amount of dry ice used

Give feet of sand removed

Hours Sandpumping

Name of Driller

REMARKS: 50' 20" 2.50 Casing Cement 1
470' of 12" 3.12 I.D. Shoe on Bott
SHoe 12X 12X 1 1/4 426' of 10" 2.5
Shoe on top Shoe 10X6X 3/4
Top of liner 455'
Perforator- 870' to 465' 10 Hole ar
Sawed 3 1/2" long. Dia. 3/4 455' to 50
5 Hole around ℄ 2 to 3" long
Dia 3/4

MOSS-WEBER INC.
Water Contractors

POST OFFICE BOX 21305
PHOENIX, ARIZONA 85036
963-8153

55 606020

FINAL WELL TEST

Date June 10, 1977

Customer City of Prescott Job No. 06 59 813

Well No. _____ Location 1/2 mile North of Del Rio Springs

Address _____

Cable Tool ☒ Rotary ☐ New ☒ Old ☐

Pump at least one hour or until well has stabilized for each flow.

	Development Beginning of	FINAL TEST				
		High	Second	Third	Fourth	Low
GPM		503	402			
Pumping level		241.9	169.9			
Static level		25	25			
Draw-down		216.9	144.9			
Specific yield		2.31	2.77			
Pump RPM		1125	980			
PPM Sand		10	25			

Recovery: 5 minute 103.5 Ft. 10 minute 76.2 Ft. 15 minute 60 Ft.

Total Pumping Time 91 hours Water Temperature 55°F

Total Pump Setting 418 Ft. Pump Size 8x3x1-15/16 Air Line 400 Ft.

Bowl Manufacturer Jacuzzi Bowl Dia. 10 Stages 18 Model _____

Fuel Consumed 420 gal. Oil Consumed 3 gal.

Engines No. 2 G.M.C. 671

Remarks: Well not stable at 500 G.P.M. after 20 hours at this rate.

Dan Darnell
Operator

55 606020

Formation on Well of City of prescott

0-6' Top Soil

6-24' Clay Gravel Rocks

24' to 63' Volcanic Boulders Clay Gravel

63' to 70' Basalt

70' to 100' Basalt Volcanic Material

100' to 125 Volcanic Sand Gravel Red Clay

125' to 165' Red Clay Sand Gravel With Hard Streake

165' to 290' Volcanis Sand Rocks Little Red Clay

290' to 365' Gray Clay Sand Gravel

365 to 415' Hard Red Clay Sand Gravel

415' to 525' Shale Red Clay

525' to 600' Shale Brown Sandy Clay Little Gravel

600' to 615 Shale Red Clay

615 to 675' Shale Brown Sandy Clay

675' to 800' Shale Fine Sand Brown Clay

800' to 870' Shale or Schist

870' to 880' Shale or Shhist little Brown Clay

Hit Water 27' Water Stand at 24'

RECEIVED AUG 13 2007 WATER MGMT SUPP

RECEIVED JUL 20 2007 PRESCOTT AMA

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
www.azwater.gov

Request to Change Well Information

FILE NUMBER: B(16-2)14CDA
WELL REGISTRATION NUMBER: 55-606021

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: CITY OF PRESCOTT

MAILING ADDRESS: P.O. BOX 2059

CITY / STATE / ZIP CODE: PRESCOTT, AZ 86302

CONTACT PERSON NAME AND TITLE: JIM HOLT, WATER RESOURCES MGR

TELEPHONE NUMBER: (928) 777-1130 FAX: (928) 771-5929

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
16N	2W	14	NE ¼	SE ¼	SW ¼

LATITUDE ° Degrees	' Minutes	" N Seconds	LONGITUDE ° Degrees	' Minutes	" W Seconds

METHOD OF LATITUDE/LONGITUDE (CHECK ONE): ☐ *GPS: Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): ☐ NAD-83 ☐ Other (*please specify*):

COUNTY ASSESSOR'S PARCEL ID NUMBER

BOOK	MAP	PARCEL	COUNTY WHERE WELL IS LOCATED
306	18	018	YAVAPAI

Type of Request (CHECK ONE)

☐ Change of Well Drilling Contractor *(Fill out Section 2)* ☐ Change of Well Ownership *(Fill out Section 3)* ☒ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required) — $10 FEE

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

Current Well Drilling Contractor		New Well Drilling Contractor	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
DWR LICENSE NUMBER		DWR LICENSE NUMBER	ROC LICENSE CATEGORY
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required) — $10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
MAILING ADDRESS		MAILING ADDRESS	
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required) — NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN: CHANGE TO SERVICE AREA WELL

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

TYPE OR PRINT NAME AND TITLE: STEVE NORWOOD, CITY MANAGER

SIGNATURE OF WELL OWNER: [signature] DATE: 7/19/07

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED APR 12 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

05

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	606024
FILE NO.	B(16-2)14cda
FILED (DATE)	4/14/82
AT (TIME)	3
INA	—
AMA	Prescott

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL – $10.00	☒

1. Name of Registrant:
   City of Prescott
   P. O. Box 2059, Prescott, Arizona 86302
   (Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law: Drilled prior to 1968
   _____ (File Number) 35- (Control Number)

3. a. The well is located within the NSE ¼ SE ¼ SW ¼, Section 14, of Township 16N N/S, Range 2W E/W, G & SRB & M, in the County of Yavapai.
   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
   Municipal.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
   _____
   (Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 600 feet
   b. Diameter of casing 16 inches
   c. Depth of casing 330 feet
   d. Type of casing Steel .
   e. Maximum pump capacity 1500 gallons per minute.
   f. Depth to water 135 feet below land surface.
   g. Date well completed unknown (Month) (Day) (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☐.
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   See Prescott water service area map attached
   Attach additional sheet if necessary.

9. DATE 3/24/82 SIGNATURE OF REGISTRANT [signature]

AUG 13 2007

RECEIVED

JUL 20 2007

PRESCOTT AMA

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
www.azwater.gov

Request to Change Well Information

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

FILE NUMBER: B(16-2)14CD A

WELL REGISTRATION NUMBER: 55-606022

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: CITY OF PRESCOTT

MAILING ADDRESS: P.O. Box 2059

CITY / STATE / ZIP CODE: PRESCOTT, AZ 86302

CONTACT PERSON NAME AND TITLE: JIM HOLT, WATER RESOURCE MGR

TELEPHONE NUMBER: (928) 777-1130

FAX: (928) 771-5929

Location of Well

WELL LOCATION ADDRESS (IF ANY)

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
16N	2W	14	NE ¼	NW ¼	SW ¼

LATITUDE				LONGITUDE			
° Degrees	' Minutes	" Seconds	N	° Degrees	' Minutes	" Seconds	W

METHOD OF LATITUDE/LONGITUDE (CHECK ONE) ☐ *GPS: Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE) ☐ NAD-83 ☐ Other (*please specify*):

COUNTY ASSESSOR'S PARCEL ID NUMBER			COUNTY WHERE WELL IS LOCATED
BOOK	MAP	PARCEL	
306	18	010K	YAVAPAI

Type of Request (CHECK ONE)

☐ Change of Well Drilling Contractor *(Fill out Section 2)* ☐ Change of Well Ownership *(Fill out Section 3)* ☒ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required) — $10 FEE

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

Current Well Drilling Contractor		New Well Drilling Contractor	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
DWR LICENSE NUMBER		DWR LICENSE NUMBER	ROC LICENSE CATEGORY
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required) — $10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
MAILING ADDRESS		MAILING ADDRESS	
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required) — NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN: CHANGE TO SERVICE AREA WELL

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

TYPE OR PRINT NAME AND TITLE: STEVE NORWOOD, CITY MANAGER

SIGNATURE OF WELL OWNER: [signature]

DATE: 7/19/07

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

RECEIVED APR 12 1982 DEPT. OF WATER RESOURCES

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

05

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	606022
FILE NO.	B(16-2)14cbb
FILED (DATE)	4/12/82
AT (TIME)	3
INA	—
AMA	PRESCOTT

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL – $10.00	☒

1. Name of Registrant:

City of Prescott

P. O. Box 2059, Prescott, Arizona 86302
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law: Drilled prior to 1968

(File Number) 35- (Control Number)

3. a. The well is located within the ~~SW~~ NE ¼ NW ¼ SW ¼, Section 14, of Township 16N N/S, Range 2W E/W, G & SRB & M, in the County of Yavapai.

   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Municipal.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒

(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 690 feet
   b. Diameter of casing 20 inches
   c. Depth of casing 352 feet
   d. Type of casing Steel .
   e. Maximum pump capacity 2000 gallons per minute.
   f. Depth to water 120 feet below land surface.
   g. Date well completed July (Month) (Day) 1962 (Year) .

8. The place(s) of use of water. If same as Item 3, check this box ☐.
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   See Prescott water service area map attached
   Attach additional sheet if necessary.

9. DATE 3/24/82 SIGNATURE OF REGISTRANT [signature]

FORM W-3 10-45 JAHN-TYLER

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REPORT OF WELL DRILLER

Report of Well Driller is required to be made and filed with the State Land Commissioner as required by Section 7, Chapter 12, Senate Bill No. 3, Seventeenth Legislature, First Special Session, 1945. A separate report shall be made for each well and filed within 30 days after completion of the well.

1. Owner D. L. Churchill
Name
Address C Bar V Valley.

2. Lessee or Operator
Name
Address

3. Driller D. L. Churchill
Name
Address

4. Location of well: Twp. NW¼ Rge. NE¼ Section SW¼ Sec 14 T. 16N, R. 2W.
¼ ¼ ¼
10-acre subdivision

DESCRIPTION OF WELL

5. Total depth of hole 692 ft.

6. Type of casing Welded casing

7. Diameter and length of casing 15 in. from to , in. from to , in. from to

8. ~~Method of sealing at reduction points~~ Casing was driven to Rock 3 20 FT

9. Perforated from 320 to , from to , from to , from to

10. Size of cuts Number cuts per foot

11. If screen was installed: Length ft. Diam. in. Type

12. Method of construction drilled Cable Tools
drilled, dug, driven, bored, jetted, etc.

13. Date completed Feb 48
Month Year

14. Depth to water 110 ft.
If flowing well, so state.

15. Describe point from which depth measurements were made, and give sea-level elevation if available Ground Level

16. If flowing well, state method of flow regulation

DISCHARGE DATA

17. Well discharge 10" pump 1700 gal per minute
gal. per min. or cu. ft. per sec. or miner's inches.

18. Method of discharge measurement
weir, orifice, current meter, etc.

19. Drawdown 11 ft.

20. Purpose of use Irrigation Farm

21. Place of use: (See 22) Twp. Rge. Section Acres
Legal subdivision
Twp. Rge. Section Acres
Legal subdivision

22. If well is part of irrigation system of Irrigation District, Association or Company, omit 21 and give name of project.
320
Name of Project

(B-16-2)14 cab

EQUIPMENT DATA

23. Kind of pump Peerless Turbine
turbine, centrifugal, etc.

24. Kind of power Diesel
electric, natural gas, etc.

25. Horsepower rating of motor 78

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 3/14/50 by kb
Filed 3/25/50 by kb
File No. (B-16-2)14 cab
Cross-referenced (Name) by
Cross-referenced (Basin) by
Cross-referenced by

(See Other Side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	5	Soil
5	320	Clay
320	450	[illegible]
450	475	[illegible]
475	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
475 to bottom in shale.		

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller [illegible signature]
Name

[illegible]
Address

Date

RECEIVED

AUG 13 2007

Arizona Department of Water Resources
Water Management Support Section
P.O. Box 458 • Phoenix, Arizona 85001-0458
(602) 771-8500 • (800) 352-8488
www.azwater.gov

Request to Change Well Information

RECEIVED
JUL 20 2007
PRESCOTT AMA

FILE NUMBER: B(16-2)22DBA
WELL REGISTRATION NUMBER: 55-606024

- Review instructions prior to completing form in black or blue ink.
- You must include with your Notice:
  - check or money order for any required fee(s)
- Authority for fee: A.A.C. R12-15-151(B)(4)(a), A.R.S. § 45-113(B)

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: CITY OF PRESCOTT

MAILING ADDRESS: P.O. Box 2059

CITY / STATE / ZIP CODE: PRESCOTT, AZ 86302

CONTACT PERSON NAME AND TITLE: JIM HOLT, WATER RESOURCE MGR

TELEPHONE NUMBER: (928) 777-1130

FAX: (928) 771-5929

Location of Well

WELL LOCATION ADDRESS (IF ANY):

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
16N	2W	22	NE ¼	NW ¼	SE ¼

LATITUDE			LONGITUDE		
° Degrees	' Minutes	"N Seconds	° Degrees	' Minutes	"W Seconds

METHOD OF LATITUDE/LONGITUDE (CHECK ONE): ☐ *GPS: Hand-Held ☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE): ☐ NAD-83 ☐ Other (*please specify*):

COUNTY ASSESSOR'S PARCEL ID NUMBER			COUNTY WHERE WELL IS LOCATED
BOOK	MAP	PARCEL	
306	23	077C	YAVAPAI

Type of Request (CHECK ONE)

☐ Change of Well Drilling Contractor *(Fill out Section 2)* ☐ Change of Well Ownership *(Fill out Section 3)* ☒ Change of Well Information (location, use, etc.) *(Fill out Section 4)*

SECTION 2. REQUEST TO CHANGE WELL DRILLING CONTRACTOR ($10 Fee Required) — $10 FEE

- If drilling or abandoning a well, the Department must receive this request and issue authorization to the new drilling firm prior to the commencement of well drilling or abandonment.

Current Well Drilling Contractor		New Well Drilling Contractor	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
DWR LICENSE NUMBER		DWR LICENSE NUMBER	ROC LICENSE CATEGORY
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 3. STATEMENT OF CHANGE OF WELL OWNERSHIP ($10 Fee Required) — $10 FEE

- If this change pertains to more than one well and the names are the same, only one $10 fee is required.

Previous Well Owner		New Well Owner	
FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL		FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL	
MAILING ADDRESS		MAILING ADDRESS	
CITY / STATE / ZIP CODE		CITY / STATE / ZIP CODE	
CONTACT PERSON NAME AND TITLE		CONTACT PERSON NAME AND TITLE	
TELEPHONE NUMBER	FAX	TELEPHONE NUMBER	FAX

SECTION 4. CHANGE OF WELL INFORMATION (No Fee Required) — NO FEE

NOTE: Applies only to wells that have already been drilled. For proposed wells, an amended Notice of Intent to Drill a Well must be filed.

EXPLAIN: CHANGE TO SERVICE AREA WELL

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

TYPE OR PRINT NAME AND TITLE: STEVE NORWOOD, CITY MANAGER

SIGNATURE OF OWNER: [signature]

DATE: 7/19/07

DEPARTMENT OF WATER RESOURCES
99 EAST VIRGINIA AVENUE
PHOENIX, ARIZONA 85004

REGISTRATION OF EXISTING WELLS

READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT OR TYPE — FILE IN DUPLICATE

05

FOR OFFICE USE ONLY	
REGISTRATION NO. 55-	606024
FILE NO.	B(16-2)22 dbca
FILED (DATE)	4/12/82
AT (TIME)	3
INA	—
AMA	PRESCOTT

REGISTRATION FEE (CHECK ONE)	
EXEMPT WELL (NO CHARGE)	☐
NON-EXEMPT WELL – $10.00	☒

1. Name of Registrant:
City of Prescott
P. O. Box 2059, Prescott, Arizona 86302
(Address) (City) (State) (Zip)

2. File and/or Control Number under previous groundwater law: Drilled prior to 1968
(File Number) 35- (Control Number)

3. a. The well is located within the NE ¼ NW ¼ SE ¼, Section 22, of Township 16N N/S, Range 2W E/W, G & SRB & M, in the County of Yavapai.

   b. If in a subdivision: Name of subdivision _____, Lot No. _____, Address _____.

4. The principal use(s) of water (Examples: irrigation - stockwater - domestic - municipal - industrial)
Municipal.

5. If for irrigation use, number of acres irrigated from well _____.

6. Owner of land on which well is located. If same as Item 1, check this box ☒
(Address) (City) (State) (Zip)

7. Well data (If data not available, write N/A)
   a. Depth of Well 548 feet
   b. Diameter of casing 16 inches
   c. Depth of casing 285 feet
   d. Type of casing Steel.
   e. Maximum pump capacity 900 gallons per minute.
   f. Depth to water 197 feet below land surface.
   g. Date well completed December (Month) (Day) 1947 (Year).

8. The place(s) of use of water. If same as Item 3, check this box ☐.
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   ____¼ ____¼ ____¼, Section ____ Township ____ Range ____
   See Prescott water service area map attached.
   Attach additional sheet if necessary.

9. DATE 3/24/82 SIGNATURE OF REGISTRANT [signature]

FORM W-3 2M 8-46 JAHN-TYLER

55 606024

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

City of Prescott

REPORT OF WELL DRILLER

Report of Well Driller is required to be made and filed with the State Land Commissioner as required by Section 7, Chapter 12, Senate Bill No. 3, Seventeenth Legislature, First Special Session, 1945. A separate report shall be made for each well and filed within 30 days after completion of the well.

RECEIVED
DEC 15 1947
WATER DIVISION
State Land Department

1. Owner City of Prescott, Arizona.
Name
Prescott, Arizona.
Address

2. Lessee or Operator
Name
Address

3. Driller Roscoe Moss Company (Driller K, Kirkland
Name
4360 Worth Street, Los Angeles, California.
Address

4. Location of well: Twp. 16 North Rge. 2 West Section 22 Yavapai County, Arizona.
____ ¼ ____ ¼ ____ ¼
10-acre subdivision

DESCRIPTION OF WELL

5. Total depth of hole 548 ft.

6. Type of casing Hard Red Steel

7. Diameter and length of casing 16 in. from 0 to 548, ____ in. from ____ to ____, ____ in. from ____ to ____

8. Method of sealing at reduction points Not Reduced

9. Perforated from None to ____, from ____ to ____, from ____ to ____, from ____ to ____

10. Size of cuts None Number cuts per foot ____

11. If screen was installed: Length None ft. Diam. ____ in. Type ____

12. Method of construction Drilled California Type Cable Tool
drilled, dug, driven, bored, jetted, etc.

13. Date completed December 12, 1947
Month Year

14. Depth to water 150 ft.
If flowing well, so state.

15. Describe point from which depth measurements were made, and give sea-level elevation if available Ground Surface

16. If flowing well, state method of flow regulation Not flowing

DISCHARGE DATA

Not Tested

17. Well discharge ____
gal. per min. or cu. ft. per sec. or miner's inches.

18. Method of discharge measurement ____
weir, orifice, current meter, etc.

19. Drawdown ____ ft.

20. Purpose of use ____

21. Place of use: (See 22) Twp. ____ Rge. ____ Section ____ ____ Acres ____
Legal subdivision

22. Purpose of use ____

Twp. ____ Rge. ____ Section ____ ____ Acres ____
Legal subdivision

22. If well is part of irrigation system of Irrigation District, Association or Company, omit 23 and give name of project.

55 606024
Name of Project

(B-16-2)22

EQUIPMENT DATA

23. Kind of pump ____
turbine, centrifugal, etc.

24. Kind of power ____
electric, natural gas, etc.

25. Horsepower rating of motor ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 12-15-47 by lj
Filed 1-7-48 by lj
File No. (B-16-2)22
Cross-referenced (Name) ____ by ____
Cross-referenced (Basin) ____ by ____
Cross-referenced ____ by ____

(See Other Side)

LOG OF WELL 55 606024

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	6	Soil
6	9	Brown sand
9	120	Sandy brown clay
120	175	Sandy brown clay small sharp gravel
175	283	Sandy brown clay, sharp gravel, broken lava.
283	308	Black lava, coarse and fine cuttings
308	330	Fractured black brown , white lava, coarse cuttings
330	363	Black lava, fine cuttings
363	382	Brown lava, fine cuttings
382	403	Brown and white lava, per cuttings
403	445	Brown and black lava, fine cuttings
445	465	Brown lava, fine cuttings
465	490	Fractured brown lava, coarse cuttings
490	503	Brown lava, fine cuttings
503	525	Grey and brown lava, fine cuttings
525	544	Brown lava, fine cuttings
544	548	Brown and black lava, fine cuttings.

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Roscoe Moss Company
Name

4360 Worth Street, Los Angeles, Calif
Address

Date December 12, 1947

FORM W-3 2M 8-46 JAHN-TYLER

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

55 606025

City of Prescott REPORT OF WELL DRILLER

Report of Well Driller is required to be made and filed with the State Land Commissioner as required by Section 7, Chapter 12, Senate Bill No. 3, Seventeenth Legislature, First Special Session, 1945. A separate report shall be made for each well and filed within 30 days after completion of the well.

RECEIVED
OCT 24 1947
WATER DIVISION
State Land Department

1. Owner City of Prescott
Name
Prescott, Arizona.
Address

2. Lessee or Operator
Name
Address

3. Driller Roscoe Moss Company
Name
4360 Worth Street, Los Angeles, California.
Address

4. Location of well: Twp. 16 North Rge. 2 West Section 22 Yavapai County
SE 1/4 NW 1/4 SE 1/4
10-acre subdivision

DESCRIPTION OF WELL

5. Total depth of hole 700 ft.

6. Type of casing Hard Red Steel

7. Diameter and length of casing 16 in. from 0 to 700, ____ in. from ____ to ____, ____ in. from ____ to ____

8. Method of sealing at reduction points Not Reduced

9. Perforated from No. Perforations to ____, from ____ to ____, from ____ to ____, from ____ to ____

10. Size of cuts No cuts Number cuts per foot None
None

11. If screen was installed: Length ____ ft. Diam. ____ in. Type ____

12. Method of construction Drilled California Type Cable Tool
drilled, dug, driven, bored, jetted, etc.

13. Date completed October 16, 1947
Month Year

14. Depth to water 165 ft.
If flowing well, so state.

15. Describe point from which depth measurements were made, and give sea-level elevation if available Ground Surface

16. If flowing well, state method of flow regulation

DISCHARGE DATA

17. Well discharge
gal. per min. or cu. ft. per sec. or miner's inches.

18. Method of discharge measurement
weir, orifice, current meter, etc.

19. Drawdown ft.

20. Purpose of use

21. Place of use: Twp. Rge. Section Acres
(See 22) Legal subdivision

22. Purpose of use

Twp. Rge. Section Acres
Legal subdivision

22. If well is part of irrigation system of Irrigation District, Association or Company, omit 23 and give name of project.

55 606025
Name of Project

(B-16-2)22 dbd

EQUIPMENT DATA

23. Kind of pump
turbine, centrifugal, etc.

24. Kind of power
electric, natural gas, etc.

25. Horsepower rating of motor

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 10-24-47 by lj
Filed 10-28-47 by lj
File No. (B-16-2)22 dbd
Cross-referenced (Name) ____ by ____
Cross-referenced (Basin) ____ by ____
Cross-referenced ____ by ____

(See Other Side)

(B-16-2) 22 DBD 55-606025

LOG OF WELL 55 606025

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	9	Sandy clay
9	188	Sandy brown clay
188	256	Sandy brown clay, sharp black gravel
256	275	Broken black lava, rock and grey sandy clay coarse cuttings
275	296	Black lava, coarse cutting
296	308	Fractured black lava.
308	313	Broken balck lava and grey clay, large cuttings
313	325	Black lava, large cuttings
325	344	Black lava, fine cuttings
344	366	Fractured black lava, coarse cuttings
366	380	Brown and black lava, fine cuttings
380	426	Black lava, fine cuttings
426	482	Fractured brown and black lava, fine to coarse cuttings, losing cuttings between 465 and 473 feet.
482	506	Black lava, fine cuttings
506	512	Fractured black lava, coarse cuttings
512	526	Fractured brown lava, fine cuttings
526	580	Black lava, fine cuttings
580	598	Fractured brown lava, coarse cuttings
598	612	Fractured brown lava, some clay, coarse cuttings
612	623	Black lava, fine cuttings
623	626	Fractured brown and black lava and clay
626	650	Sandy brown clay
650	700	Brown clay and gravel

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Roscoe Moss Company
Name

4360 North Street, Los Angeles
Address

Date October 21, 1947

OLD CAPPED WELL

STATE LAND DEPARTMENT
GROUND WATER DIVISION
STATE OF ARIZONA

55 606600

REGISTRATION OF WELL

1. OWNER W. J. Wells
Name
P O Box 525 Chino Valley, AZ 86323
Address

2. LESSEE OR OPERATOR
Name
Address

3. DRILLER A.L. Sanders
Name
Unknown
Address

4. LOCATION OF WELL: Twp. 16N Rge. 2W Section 12 SW ¼ NE ¼ SW ¼
10-acre subdivision

DESCRIPTION OF WELL

5. Total depth of hole 644 ft.

6. Type of casing

7. Diameter and length of casing 8 in. from to , in. from to , in. from to

8. Perforated from NO to , from to , from to , from to

9. Size of cuts Number cuts per foot

10. If screen was installed: Length ft. Diam in. Type

11. Date completed 4 -14 1941 Deepened
Month Year Month Year

12. Depth of water when drilled ft. If flowing well, so state Flowing 4-14-41

13. Present depth to water from land surface 82 ft. Date of measurement 7/17/78

14. If flowing well, state method of flow regulation Static level 7/17/78 82 feet

DISCHARGE DATA

15. Well discharge 118 G P M 4/14/41
gal. per min. or cu. ft. per sec. or miner's inches.

16. Method of discharge measurement
weir, orifice, current meter, etc.

17. Drawdown ft.

18. Annual discharge in acre-feet or number of hours pumped: 1944 a.f. or hrs. 1945 a.f. or hrs.

19. Purpose of use

20. Place of use: Twp. 16N Rge. 2W Section 12 Legal subdivision Acres
(See 21)

Twp. Rge. Section Legal subdivision Acres

21. If well is part of irrigation system or Irrigation District, Association or Company, omit 20 and give name of project.
Old Home Manor Farm Not in use 1978
Name of Project

55 606600

EQUIPMENT DATA

22. Kind of pump
turbine, centrifugal, etc.

23. Kind of power
electric, natural gas, etc.

24. Horsepower rating of motor

DO NOT WRITE IN THIS SPACE

OFFICE RECORD

Received 12-13-78 by jp

Filed 12-14-78 by jp

File No. B(16-2)12 cac
XX128

G-302 Rev.—5M—2-57

(See Other Side)

55 606300

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	5	Top Soil
5	38	Clay
38	40	Gravel & Clay - water
40	78	Clay
78	90	Gravel & Clay - water
90	170	Clay
170	178	Gravel & Clay - water
178	290	Clay
290	310	Conglomerate
310	450	Clay & Boulders
450	530	Black Malapai
530	615	Red Malapai
615	630	Black Malapai
630	644	Clay & Boulders

I hereby certify that I have read the foregoing statements, and that each and all of the items therein contained are true to the best of my knowledge and belief.

W. L. Wells
Owner, Operator or Driller

PO Box 525 Paint Valley, Ky
Address

Date 8-1-78

DEPARTMENT
1978 DEC 13 PM 2:56
STATE LAND

FORM W-3 2M 12-47 JAHN-TYLER

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REPORT OF WELL DRILLER

Report of Well Driller is required to be made and filed with the State Land Commissioner as required by Section 7, Chapter 12, Senate Bill No. 3, Seventeenth Legislature, First Special Session, 1945. A separate report shall be made for each well and filed within 30 days after completion of the well.

1. Owner Claude Aiken
Name
Chino Valley ariz Box 155
Address

2. Lessee or Operator
Name
Address

3. Driller Frank P. Leonard
Name
Chino Valley ariz
Address

4. Location of well: Twp. 16 Rge. 2 W Section 2 ¼ ¼ ¼
10-acre subdivision

DESCRIPTION OF WELL

5. Total depth of hole 362 ft.

6. Type of casing 12" I.D. Welded Casing

7. Diameter and length of casing 12 in. from 0 to 112, ____ in. from ____ to ____, ____ in. from ____ to ____

8. Method of sealing at reduction points Cemented

9. Perforated from ____ to ____, from ____ to ____, from ____ to ____, from ____ to ____

10. Size of cuts ____ Number cuts per foot ____

11. If screen was installed: Length ____ ft. Diam. ____ in. Type ____

12. Method of construction Drilled
drilled, dug, driven, bored, jetted, etc.

13. Date completed Dec 11 1947
Month Year

14. Depth to water Flowing ft.
If flowing well, so state.

15. Describe point from which depth measurements were made, and give sea-level elevation if available ____

16. If flowing well, state method of flow regulation Gate Valve

DISCHARGE DATA

17. Well discharge Estimated flow 125 Miner inches
gal. per min. or cu. ft. per sec. or miner's inches.

18. Method of discharge measurement ____
weir, orifice, current meter, etc.

19. Drawdown ____ ft.

20. Purpose of use irrigation

21. Place of use: (See 22) Twp. ____ Rge. ____ Section ____ ____ Acres ____
Legal subdivision

22. Purpose of use ____
Twp. 16 Rge. 2 W Section 2 ____ Acres 80
Legal subdivision

22. If well is part of irrigation system of Irrigation District, Association or Company, omit 23 and give name of project.

Name of Project

(B-16-2)2

EQUIPMENT DATA

23. Kind of pump ____
turbine, centrifugal, etc.

24. Kind of power ____
electric, natural gas, etc.

25. Horsepower rating of motor ____

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received 4-20-49 by ld
Filed 4-28-49 by ld
File No. (B-16-2)2
Cross-referenced (Name) ____ by ____
Cross-referenced (Basin) ____ by ____
Cross-referenced ____ by ____

(See Other Side)

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

From (feet)	To (feet)	Description of formation material
0	5	Top Soil
5	35	Volcanic ash, first water @ 35 ft
~~35~~	~~35~~	water level @ 15 ft
35	352	Colgomerate Rocks and Clay
352	496	Clay Very Sticky
496	498	Red Coarse Malapai
498	502	Black Coarse Malapai
502	507	Red fine resembles sand well Started Flowing @ 507
507	517	red fine sand
517	519	medium coarse watered red fine sand
519	562	water increasing Estimated 6 Gpm @ 125 Pressure

I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller Frank P. Leonard
Name

Chino Valley
Address

Date Feb 20 - 1948

LAND DEPARTMENT
WATER DIVISION
STATE OF ARIZONA

REPORT OF WELL DRILLER

This report should be prepared by the driller in all detail and filed with the State Land Commissioner following completion of the well.

1. OWNER W. J. Wells (Name)
P. O. Box 125, Chino Valley, Az 86323 (Address)

2. Lessee or Operator (Name)
(Address)

3. DRILLER V Lewis Ranch Drilling # 33322 (Name)
PO Box 125 Chino Valley, Ariz. (Address)

4. Location of well: Twp. 17 North Rge. 2 West Section 35 SW ¼ SW ¼ SW ¼ (10-acre subdivision)

5. Intention to Drill File No. Permit No. GC-6

DESCRIPTION OF WELL

6. Total depth of hole 710 ft. ft.

7. Type of casing Steel

8. Diameter and length of casing 12 in. from 0 to 200', in. from 200' to 600', 8" in. from to

9. Method of sealing at reduction points Cemented

10. Perforated from None, from to, from to, from to

11. Size of cuts Number of cuts per foot

12. If screen was installed: Length ft. Diam. in. Type

13. Method of construction (drilled, dug, driven, bored, jetted, etc.)

14. Date started 9 (Month) 15 (Day) 74 (Year)

15. Date completed 12 (Month) 1 (Day) 75 (Year)

16. Depth of water Flowing water in March. (If flowing well, so state.)

17. Describe point from which depth measurements were made, and give sea-level elevation if available

18. If flowing well, state method of flow regulation 40 gal Minutes

19. REMARKS:
This well will flow during of season of irrigation pumping only.

DO NOT WRITE IN THIS SPACE
OFFICE RECORD

Received by
Filed by
File No. B(17-2)35 ccc
23191

(Well Log to Appear on Reverse Side)

WD FORM G-301
REV. 4-27-53

LOG OF WELL

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION MATERIAL
0	4	Top Soil
4	10	Caliche
10	32	Sandy Clay
32	36	fine sand
36	75	decomposed granite & sandy clay
75	200	small Boulders
200	504	decomposed Granite
504	578	Clay
578	582	Sand & Gravel
582	618	Malapai medium Hard
618	630	no cuttings water raised 15 ft. 15' static
630	636	Malapai rock
636	652	no cuttings water started flowing
652	657	red Malapai
657	666	no cutting water flow increased
666	683	Black fine ??
683	692	no cuttings water flow increase
692	698	Black fine ??
698	710	red fine Hard

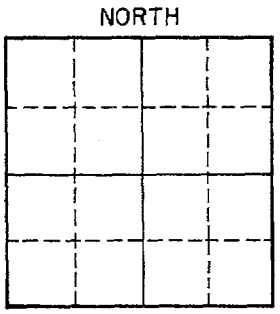
I hereby certify that this well was drilled by me (or under my supervision), and that each and all of the statements herein contained are true to the best of my knowledge and belief.

Driller V Seven Ranch
Name
PO Box 125
Chino Valley, Az
Address

Date 6-25-75

STATE LAND DEPARTMENT
Water Division
Phoenix 7, Arizona

Location of Well



(Indicate Well Location by a circle "o" in the above Section Plat)

File No. B(17-2)35 ccc

REPORT OF EQUIPMENT INSTALLED

OWNER W. J. Wells
P. O. Box 125, Chino Valley, Az 86323

LOCATION OF WELL:

SW 1/4 SW 1/4 SW 1/4, Sec. 35 Twp. 17N Rge. 2W

Date Well Completed: 4-1-75 Depth 710 ft.

1. Well Test:

Discharge: 1000 gal/min (Gal. Per Min.) Date Well Tested: 6-15-75

Method of Discharge Measurement: _____ (weir, orifice, current meter, etc.)

Static Water Level: 0 ft. Drawdown 50' ft.

Total Pumping Lift 50' ft.

2. Equipment Installed:

Kind of Pump: 8" turbine pump. (turbine, centrifugal, etc.)

Kind of Power: Electric (Elec., Nat. Gas, Etc.) H. P. Rating of Motor 25 H.P.

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

W J Wells
Signature

Date 6-25, 1975

PO Box 125
Address
Chino Valley, Az

WD Form G-306
10-57

STATE LAND DEPARTMENT
GROUND WATER DIVISION
STATE OF ARIZONA

REGISTRATION OF WELL

1. OWNER Hazel B. Aitken (Name)
P O Box 155, Kins Valley, Ariz 86323 (Address)

2. LESSEE OR OPERATOR W. J. Wells (Name)
P O Box 175, Kins Valley, Ariz 86323 (Address)

3. DRILLER Boyles (Name)
Kins Valley, Ariz (Address)

4. LOCATION OF WELL: Twp. 17 S Rge. 2 W Section 35 SW ¼ SW ¼ SW ¼ (10-acre subdivision)

DESCRIPTION OF WELL

5. Total depth of hole 707 ft.

6. Type of casing 6" 5 1/8" open hole to bottom

7. Diameter and length of casing 6 in. 10 from 0 to 85, in. from to, in. from to

8. Perforated from to, from to, from to, from to

9. Size of cuts Number cuts per foot

10. If screen was installed: Length ft. Diam in. Type

11. Date completed 11-9-37 (Month / Year) Deepened to 730' 4-1947 (Month / Year)

12. Depth of water when drilled ft. If flowing well, so state flowing

13. Present depth to water from land surface flows at times ft. Date of measurement

14. If flowing well, state method of flow regulation flows in ~~if~~ irrigation season

DISCHARGE DATA

15. Well discharge Not guessed (gal. per min. or cu. ft. per sec. or miner's inches.)

16. Method of discharge measurement (weir, orifice, current meter, etc.)

17. Drawdown ft.

18. Annual discharge in acre-feet or number of hours pumped: 1944 a.f. or hrs. 1945 a.f. or hrs.

19. Purpose of use irrigation

20. Place of use: (See 21) Twp. 17 S Rge. 2 W Section 35 SW¼ SW (Legal subdivision) Acres 40 A +-
Twp. 17 S Rge. 2 W Section 35 W½ SE SW (Legal subdivision) Acres 20 A +-

21. If well is part of irrigation system or Irrigation District, Association or Company, omit 20 and give name of project.
None (Name of Project)

EQUIPMENT DATA

22. Kind of pump None (turbine, centrifugal, etc.)

23. Kind of power (electric, natural gas, etc.)

24. Horsepower rating of motor

DO NOT WRITE IN THIS SPACE

OFFICE RECORD

Received 11-29-71 by fmr

Filed 11-29-71 by fmr

File No. B(17-2)35 acc

G-302 Rev.—5M—2-57

(See Other Side)

LOG OF WELL

STATE LAND DEPARTMENT

1971 NOV 29 PM 4 12 6

Indicate depth at which water was first encountered, and the depth and thickness of water bearing beds. If water is artesian, indicate depth at which encountered, and depth to which it rose in well.

FROM (FEET)	TO (FEET)	DESCRIPTION OF FORMATION
0	60	Clay
60	67	Black Sand
67	400	Clay
400	460	Black Dry above first flow 645'
460	620	~~Red Mottled~~ Clay
620	700	Red Mahogany
700	707	Black Quicksand, very fine

I hereby certify that I have read the foregoing statements, and that each and all of the items therein contained are true to the best of my knowledge and belief.

Hazel B Aikens dba Dixie Drilling
Owner, Operator or Driller

PO Box 155 Dixie Valley, Nev
Address

Date 11-29-71

Run Date: 12/02/1998

WELL REGISTRY REPORT - WELLS55

Location B 16 0 2 0 2 C A B **WR** 807040 **AMA** NOT WITHIN ANY AMA OR INA

Name JERMAN, DONALD,E
935 S EAGLE CIR

MESA AZ 85208

File Type LATE REGISTRATION
Application/Issue Date 04/03/1995

Owner OWNER
Driller Nbr 0
Driller Name NO DRILLER SPECIFIED
Driller Phone
County YAVAPAI
GPM

Well Type NON-EXEMPT
SubBasin NO SUBBASIN
Watershed VERDE RIVER
Water Uses DOMESTIC
Well Uses WATER PRODUCTION
Discharge Method NONE
Power NO POWER CODE LISTED

Well Depth	~~560.00~~ 562	**Case Diam**	12.00	**Tested Cap**	0.00
Pump Cap.	36.00	**Case Depth**	~~560.00~~ 112	**CRT**	
Draw Down	0.00	**Water Level**	70.00	**Log**	X
		Acres Irrig	0.00	**Finish**	STEEL-PERFORATEDORSLOTTED CASING

Comments |ICO:& NAOMI|IPQ:|PQ#:

Current Action
00/00/0000 0

Action History
~~04/17/1976~~ 755 WELL CONSTRUCTION COMPLETED
2/11/98

Appendix

Selected Drillers' Logs of Wells in Little Chino Valley Ground Water Basin

(The terminology and descriptions of formations are those used by the individual drillers)

26cdc, T17N, R2W (Santa Fe R.R. at Del Rio)

Date drilled: 1/8/26
Casing: 15½"—0 to 21'
12½—0 to 138'
10" —128 to 275'
Perforations: None
" 23-122'
" 245-275'

FROM (FT.)	TO (FT.)	LOG
0	5	Soil
5	17	Red malapai
17	30	Sand and gravel
30	38	Red malapai
38	50	Lime formation
50	58	Red malapai
58	116	Lime and hardpan formations
116	122	Coarse sand
122	140	Hardpan or caliche
140	221	Red clay
221	245	Sticky yellow clay
245	275	Red malapai, sand and gravel
		Deepened 6/24/41
275	313	Conglomerate
313	330	Conglomerate clay streaks
		(At 330' water raised and flowed 35 gpm)
330	368	Conglomerate
368	502	Red clay
		Flowing

34bcd, T17N, R2W

Date drilled: 3/26/53
Casing: 8"—0 to 162'
Perforations: None

FROM (FT.)	TO (FT.)	LOG
0	18	Valley fill, 1st water 18'
18	30	Conglomerate and clay
30	195	Conglomerate (hard) and clay
195	205	Conglomerate—some cemented—water
205	255	Conglomerate
255	275	Red basalt—cemented
275	300	Conglomerate and clay
300	320	Conglomerate and some red basalt
320	341	Conglomerate and yellow clay
341	345	Blue basalt
345	350	Conglomerate
350	362	Cemented gravel
362	530	Red basalt, soft streaks with water
530	540	Cemented boulders—water
540	669	Red basalt—water
		Static water level—13'

34cdc, T17N, R2W

Date drilled: 8/15/59
Casing: 16"—0 to 476'
Perforations: None

FROM (FT.)	TO (FT.)	LOG
0	110	Clay
110	160	Brown clay mixed with gravel
160	454	Brown, red and yellow clay
454	515	Red malapai
515	527	Black malapai
527	582	Red malapai
582	591	Black malapai
591	628	Red malapai
		Largest flowing well in Valley

1cbd, T16N, R2W

Date drilled: Prior to 1937
Casing: 8"—0 to 70'
Perforations: None

FROM (FT.)	TO (FT.)	LOG
0	3	Surface soil
3	200	Clay (Small seep at 28'—Water at 48' raised to 44')
200	635	Clay with scattered boulders, used powder in places
635	637	Malapai sand, 1st artesian water—did not flow
637	661	Malapai rock—artesian flow
661	700	Malapai rock—no increase in flow
		Estimated flow—670 gpm

2abd, T16N, R2W

Date drilled: 2/11/48
Casing: 12"—0 to 112'
Perforations: None

FROM (FT.)	TO (FT.)	LOG
0	5	Top soil
5	35	Volcanic ash, 1st water 15'
35	352	Conglomerate, rocks and clay
352	496	Clay, very sticky
496	498	Red, coarse malapai
498	502	Black, coarse malapai
502	507	Red, fine—resembled sand
		(Well started flowing at 507')
507	517	Red, fine—resembled sand
517	519	Red, fine—resembled sand
		(flow increased)
519	562	No cuttings—reddish color
		Estimated flow 1400 gpm

3bcc, T16N, R2W

Date drilled: March, 1943
Casing: 10"—0 to 140'
Perforations: None

FROM (FT.)	TO (FT.)	LOG
0	373	Clay and gravel, surface water at 47'
373	390	Black malapai

ARIZONA DEPARTMENT OF WATER RESOURCES
OPERATIONS DIVISION
500 North Third Street, Phoenix, Arizona 85007

REGISTRATION OF EXISTING WELLS
READ INSTRUCTIONS ON BACK OF THIS FORM BEFORE COMPLETING
PRINT (Blue or Black ink) OR TYPE - **FILE IN DUPLICATE**

REGISTRATION FEE(check one)

EXEMPT WELL (No registration fee)		
LATE FEE	$10.00	___
NON-EXEMPT WELL	$10.00	X
LATE FEE	$10.00	
	$20.00	

DEPARTMENT OF WR
APR 3 1995
OPERATIONS DIV.

FOR OFFICE USE ONLY
REGISTRATION NO. 55- 807040
FILE NO. B16-2 2 CAB
FILED 4-3-95 By VGC
(Date)
INA ~~7~~
AMA ~~[illegible]~~
W/S 05 S/B ~~—~~

1. Well Owner Name Donald E. Jerman and Naomi R Jerman Telephone 602 984-4030
   935 South Eagle Circle (Mailing Address) Mesa (City) Az (State) 85208 (Zip)
2. File and/or Control Number under previous groundwater law: _____ (File No.) 35- _____ (Control No.)
3. The well is located within the NW ¼ NE ¼ SW ¼, Section 2
   of Township 16 N, Range 2 W, G&SRB&M, in the County of YAVAPAI
   (The above description is required for processing, see 3.a. under Instructions on reverse side)
   If in a subdivision: Name of subdivision Sunrise
   Lot No. Tract "A" Address Chino Valley, Arizona
4. The principal use(s) of water: Irrigation & Domestic
   (Examples: irrigation, stockwater, domestic, municipal, industrial)
5. If for irrigation use, number of acres irrigated from well Was previously used for irrigation
6. Owner of land on which well is located. If same as Item 1, please check ✓

   Name | Address | City | State | Zip

7. Well data
   a. Depth of Well 560 feet
   b. Diameter of casing 12 inches
   c. Depth of casing 560 feet
   d. Type of casing Steel
   e. Maximum pump capacity ~~500 GPM plus~~ 36 gallons per minute
   f. Depth to water 70 feet below land surface
   g. Date well completed Before April 18, 1976 ~~exact date unknown~~ (Required)
   (Month) (Day) (Year)
8. The place(s) of use of water. If same as Item 3, please check ✓

ENTERED APR 2 8 1995

____ ¼ ____ ¼ ____ ¼, Section ____ Township ____ Range ____

Donald E. Jerman
Naomi R Jerman
TYPED OR PRINTED NAME

Donald E. Jerman
Naomi R Jerman
SIGNATURE OF WELL OWNER

3-31-95
DATE

DWR-55-65 11/94 (Rev.)

Arizona Department of Water Resources
Information Management Unit
PO Box 36020 • Phoenix, Arizona 85067-6020
(602) 771-8527 • 602-771-8500

Well Driller Report and Well Log

THIS REPORT MUST BE FILED WITHIN **30 DAYS** OF COMPLETING THE WELL.

PLEASE PRINT CLEARLY USING BLACK OR BLUE INK

FILE NUMBER: **B(14-1) 6 ADC**
WELL REGISTRATION NUMBER: **55 - 920497**
PERMIT NUMBER (IF ISSUED):

RECEIVED
JUN 15 2017
ARIZONA DEPARTMENT OF WATER RESOURCES

SECTION 1. DRILLING AUTHORIZATION

Drilling Firm

Mail To:

NAME	DWR LICENSE NUMBER
DRILL-TECH, INC.	239
ADDRESS: 3320 N. HIGHWAY 89	TELEPHONE NUMBER: 928-636-8006
CITY / STATE / ZIP: CHINO VALLEY, AZ, 86323-3568	FAX

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL: CITY OF PRESCOTT
MAILING ADDRESS: 201 S CORTEZ ST
CITY / STATE / ZIP: PRESCOTT, AZ, 86303
CONTACT PERSON NAME AND TITLE:
TELEPHONE NUMBER: 928 777-1130
FAX:
WELL NAME (e.g., MW-1, PZ-3, lot 25 Well, Smith Well, etc.):

Location of Well

WELL LOCATION ADDRESS (IF ANY): 3755 OLD HWY 89

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
14N	01W	06	NE 1/4	SE 1/4	SW 1/4

LATITUDE: ° ' "N
LONGITUDE: ° ' "W

METHOD OF LATITUDE/LONGITUDE (CHECK ONE)
☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

LAND SURFACE ELEVATION AT WELL: Feet Above Sea Level

METHOD OF ELEVATION (CHECK ONE)
☐ USGS Quad Map ☐ Conventional Survey ☐ *GPS: Hand-Held ☐ *GPS: Survey-Grade

*IF GPS WAS USED, GEOGRAPHIC COORDINATE DATUM (CHECK ONE)
☐ NAD-83 ☐ Other (please specify)

COUNTY: YAVAPAI

ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
103	4	001R

SECTION 3. WELL CONSTRUCTION DETAILS

Drilling Method (CHECK ONE)
☒ Air Rotary
☐ Bored or Augered
☐ Cable Tool
☐ Dual Rotary
☐ Mud Rotary
☐ Reverse Circulation
☐ Driven
☐ Jetted
☐ Air Percussion / Odex Tubing
☐ Other (please specify)

Method of Well Development (CHECK ONE)
☒ Airlift
☐ Bail
☐ Surge Block
☐ Surge Pump
☐ Other (please specify)

Condition of Well (CHECK ONE)
☒ Capped
☐ Pump Installed

Method of Sealing at Reduction Points (CHECK ONE)
☐ None
☐ Packed
☐ Swedged
☐ Welded
☐ Other (please specify)

Construction Dates
DATE WELL CONSTRUCTION STARTED: 05/17/17
DATE WELL CONSTRUCTION COMPLETED: 06/05/17

I state that this notice is filed in compliance with A.R.S. § 45-596 and is complete and correct to the best of my knowledge and belief.

SIGNATURE OF QUALIFYING PARTY: Garth Owen
DATE: 06/08/17

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 920497

SECTION 4. WELL CONSTRUCTION DESIGN (AS BUILD) (attach additional page if needed)

Depth

DEPTH OF BORING	DEPTH OF COMPLETED WELL
1000 Feet Below Land Surface	607 Feet Below Land Surface

Water Level Information

STATIC WATER LEVEL	DATE MEASURED	TIME MEASURED	IF FLOWING WELL, METHOD OF FLOW REGULATION
UNKNOW DUE TO UNSTABLE FORMATIONS Feet Below Land Surface	N/A		☐ Valve ☐ Other:

Borehole

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	BOREHOLE DIAMETER (inches)
0	20	17.5
20	607	8.75"
607	1000	6

Installed Casing

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	OUTER (inches)	MATERIAL TYPE (T) STEEL	PVC	ABS	IF OTHER TYPE, DESCRIBE	PERFORATION TYPE (T) BLANK OR NONE	WIRE WRAP	SHUTTER SCREEN	MILLS KNIFE	SLOTTED	IF OTHER TYPE, DESCRIBE	SLOT SIZE (inches)
0	20	12	X				X						
0	607	6	X				X						

Installed Annular Material

DEPTH FROM SURFACE FROM (feet)	DEPTH FROM SURFACE TO (feet)	ANNULAR MATERIAL TYPE (T) NONE	CONCRETE	NEAT CEMENT OR CEMENT GROUT	CEMENT-BENTONITE GROUT	BENTONITE GROUT	BENTONITE CHIPS	BENTONITE PELLETS	IF OTHER TYPE OF ANNULAR MATERIAL, DESCRIBE	FILTER PACK SAND	FILTER PACK GRAVEL	FILTER PACK SIZE
0	20		X									

Well Driller Report and Well Log

WELL REGISTRATION NUMBER
55 - 920497

SECTION 5. GEOLOGIC LOG OF WELL

DEPTH FROM SURFACE FROM (feet)	TO (feet)	Description Describe material, grain size, color, etc.	Check (T) every interval where water was encountered (if known)
0	70	SAND, GRAVEL & CLAY	
70	350	SAND & GRAVEL	
350	390	DECOMPOSED GRANITE	
390	560	DECOMPOSED GRANITE & QUARTZ	
560	600	MALAPAI	
600	650	MALAPAI & RED CLAY	
650	680	RED CLAY & SAND	
680	700	MALAPAI	
700	940	RED CLAY, SAND & GRAVEL	X
940	1000	BED ROCK	

MATRIXNEWORLD
Engineering Progress

APPENDIX B

2020 CoP Annual Drinking Water Quality Report

2020 ANNUAL DRINKING WATER QUALITY & CONSUMER CONFIDENCE REPORT
(FOR CALENDAR YEAR 2019)
CITY OF PRESCOTT PUBLIC WATER SYSTEM AZ0413045

CITY OF PRESCOTT
ARIZONA

Public Works
Utilities Division
Water Operations

Virginia Street
Pump Station
Zone 16

A NOTE FROM WATER OPERATIONS

As your water provider, we serve more than water. We provide customer service, reliability, peace of mind, and protect public health. Our job is to ensure that your safe supply of water keeps flowing not only today, but well into the future. It's all part of our service commitment to you and everyone in our community. The 2020 Water Quality Report is a comprehensive report issued by the City of Prescott Water Operations. This annual report identifies the sources of Prescott's drinking water, provides water quality information, and summarizes analytical tests of the City's drinking water supply for Calendar Year 2019. In order to ensure that tap water is safe to drink, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. During 2019, water from the City system met all applicable federal and state drinking water health standards.

APPLICABLE FEDERAL AND STATE REQUIREMENTS

The United States Environmental Protection Agency (EPA) and the Arizona Department of Environmental Quality (ADEQ) require providers of drinking water to annually report the quality of the water they deliver. The City of Prescott safeguards its water supplies and once again is pleased to report compliance with prescribed maximum contaminant levels and other water quality standards. The City regularly conducts testing beyond the minimum regulatory requirements to further assure the safety of our drinking water.

SOURCE OF WATER

Groundwater is the sole source of potable water in the City of Prescott. The City produces its water from seven production wells within the Prescott Active Management Area (AMA). These wells are drilled into the confined deep Lower Volcanic Unit of the aquifer underlying the Little Chino Sub-Basin. The water is pumped from the ground through one of the City's seven active wells and treated prior to entering the drinking water distribution system. The water is of excellent quality with a sustainable production capability of 12 million gallons per day (MGD). The wells are pumped in different combinations to meet daily demand. The City's annual average daily demand is 6.1 MGD. In 2019, Prescott produced (pumped) 6,885 acre-feet of water from the wells and delivered this water to approximately 24,985 service connections through 553 miles of pipeline, 37 remote booster pump stations and 26 water storage tanks throughout the service area.

SOURCE WATER ASSESSMENT

Based on the information currently available on the hydrogeological settings of and the adjacent land uses that are in proximity of the water sources for the City's public water system, the Arizona Department of Environmental Quality has given the City a low risk designation for the degree to which the drinking water sources are protected. A low risk designation indicates that most source water protection measures are either already implemented or the hydrogeology is such that additional measures will have little impact on protection.

NATURALLY OCCURRING CONTAMINANTS

A contaminant is any physical, chemical, biological or radiological substance or matter in the water. All sources of drinking water contain some naturally occurring contaminants. At low levels, these contaminants are not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and others may even have nutritional value at low levels.

Secured Well Housing

Well Pump

Water Storage Tank

Booster Pumps

Clean Water To Your Tap

WATER QUALITY DATA REPORT

The Water Quality Data Report Table on Page 4 contains the most recent results for regulated testing. The frequency of sample collection is determined by state and federal regulations and based on many different parameters such as type of water source, number of people served, as well as past and current analyses of the contaminant to be tested. Sample frequency can range between 1 month and 3 years.

The City of Prescott is also required to test for unregulated contaminants. The data generated by these tests is used by the EPA to evaluate and prioritize contaminants on the Drinking Water Contaminant Candidate List. Regulated and unregulated contaminants will appear in this report if they are found during testing.

WATER SAMPLING

The City of Prescott monitors and samples for over 100 substances and physical characteristics on a regular basis. Among them, the City pulls 53 Total Coliform tests per month at designated sites throughout the City. The Total Coliform bacteria test is a primary indicator of the suitability for consumption of drinking water which measures the concentration of Total Coliform bacteria associated with the possible presence of disease causing organisms. The City of Prescott pulls 10 Arsenic samples monthly to ensure Arsenic levels stay below Federal and State regulatory limits. Arsenic can enter the water supply from natural deposits in the Earth; here in the southwest the source is the volcanic and granitic rocks that groundwater moves through.

WATER TREATMENT

All water produced for distribution undergoes a level of treatment. The City of Prescott is fortunate to draw from high quality aquifers, therefore, the water requires minimal treatment. Water Operations selects a combination of three appropriate treatment processes to reduce the contaminants found in our groundwater and ensure the delivery of potable water that not only meets safe levels, but surpasses state and federal regulations. The first of the three processes utilizes chlorine for disinfection to prevent the development of bacterial contamination that could occur in the water storage and distribution system. The second is an ADEQ approved Blending Plan to manage arsenic levels naturally occurring in some wells. A Blending Plan is a process that combines water from various wells with various arsenic levels to achieve a uniform potable water with the lowest detected levels of arsenic possible. This process allows the City to meet daily demands while keeping the levels of arsenic below the regulatory requirement. The third of the three processes utilizes sorptive media for the removal of arsenic where water exceeds state quality requirements. Currently, the City has one production well with this type of treatment system which maintains arsenic levels below the federal action level standards.

Sorptive Media Treatment

What is a ppm (parts per million) **measurement? What is a ppb** (parts per billion) **measurement?**

A simple way to visualize the Water Quality Table measurement scale is to consider the following analogies:

One ppm is like:

Ten bricks out of the ten million bricks used to construct the Empire State Building

One ppb is like:

The width of one human hair in the span of 68 miles (Prescott to Anthem)

WATER QUALITY DATA REPORT FOR CITY OF PRESCOTT

Primary Drinking Water Standards - Mandatory Health-Related Levels Established by EPA and ADEQ

Water Samples Collected from homes qualified per ADEQ standards in Prescott, AZ

Parameter	Violation Y or N	AL	Number of Samples Over the AL	90th Percentile	Unit	Date
Lead & Copper						
Lead Results - Homes	N	15	0	<5.0	ppb	2019
Copper Results - Homes	N	1.3	0	0.062	ppm	2019

Regulated Substances - Measured from Water Leaving the Treatment Facilities

Parameter	MCL	MCLG	Highest Level	Range	Unit	Date
Radiochemical Monitoring			Highest Detected Level	Range		
Alpha Emitters	15	0	9.6	9.0 - 9.6	pCi/L	2019
Combined Radium 226 & 228	5	0	1.2	0.8 - 1.2	pCi/L	2019
Combined Uranium 234,235,238	30	<30	14.9	1.2 - 14.9	ug/L	2019
Inorganic Compounds			Highest Detected Level	Range		
Antimony	6	6	1	1	ppb	2018
Arsenic	10	0	9.8	5.2 - 9.8	ppb	2019
Barium	2	2	0.0067	0.0025 - 0.0067	ppm	2018
Chromium	100	100	6.7	2.3 - 6.7	ppb	2018
Fluoride	4	4	1.1	0.4 - 1.1	ppm	2018
Nitrate (as N)	10	10	1.5	1.1 - 1.5	ppm	2019
Sodium	No MCL	N/A	38	13 - 38	ppm	2018
Volatile Organic Compounds			Highest Detected Level	Range		
Trichloroethene	5	<0.5	3.5	.5 - 3.5	ppb	2019
Disinfection Byproduct Monitoring			Highest Detected level	Range		
Total trihalomethane (TTHM) *	80	0	8.5	4.4 - 8.5	ppb	2019
Haloacetic acids (HAA5)	60	N/A	2.0	2.0 - 2.0	ppb	2019

Maximum Residual Disinfectant Level	MRDL	MRDLG	Highest Detected level	Range	Unit	Date
Chlorine	4.0	<4.0	2.01	0.35 - 2.01	ppm	2019

Biological Monitoring	MCLG	Entire Distribution System	Likely Source in Drinking Water	Unit	Date
Total Coliform - tested monthly	0	Highest monthly number of positive Coliform samples: **0 in 53**	Naturally present in the environment	Absent or Present	2019

Unregulated Sampling Results

Water Samples Collected from Source Water

Parameter	PQL	Highest Level	Range	Unit	Date
UCMR4 - Anions					
Bromide	0.0200	0.105	0.0774 - 0.105	mg/L	2019

Water Samples Collected from Distribution System

UCMR4 - HAA5					
Bromochloroacetic acid	0.300	0.398	0.398 - 0.398	ug/L	2019
Dibromoacetic acid	0.300	0.822	0.600 - 0.822	ug/L	2019

*** Monitoring Requirements Not Met For City Of Prescott**

During the 2019 calendar year, the City of Prescott was required to pull Total trihalomethanes (TTHM) as part of the stage 2 disinfection byproduct rule. The samples were to be taken between July 1st and July 31st of 2019, however were not pulled until August 7th of 2019. The August 7th samples were analyzed and they were well below the MCL. This confirms that the City's water quality continues to meet and exceed the federal and state guidelines for this contaminant. No emergency exists; this notice is for informational purposes only.

Please share this information with other people who drink this water, especially those who may not have seen this notification.

CONTAMINANTS & HOW THEY MAY BE INTRODUCED

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791).

- Inorganic contaminants such as salts and metals that can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- Microbial contaminants such as viruses and bacteria which may come from sewage treatment plants, septic systems, agricultural livestock operations or wildlife.
- Organic chemical contaminants, including synthetic and volatile organic chemicals that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff and septic systems.
- Pesticides and herbicides which may come from a variety of sources such as agriculture, urban storm water runoff or residential uses.
- Radioactive contaminants, such as Radon, Alpha Emitters, Beta/Photon Emitters, combined Radium and Uranium that can be naturally-occurring or the result of oil and gas production or mining activities, decay or erosion of natural and man-made deposits.
- Total trihalomethanes and Haloacetic acids are the by-product of drinking water disinfection.

ABBREVIATIONS & DEFINITIONS

ADEQ (Arizona Department of Environmental Quality) - State Regulatory Agency

AL (Action Level) - The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements which a water system must follow.

EPA (US Environmental Protection Agency) - Federal Regulatory Agency

HAA5 (Haloacetic acids 5) - Five most commonly found in drinking water.

MCL (Maximum Contaminant Level) - The highest level of a contaminant allowed by the EPA in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology.

MCLG (Maximum Contaminant Level Goal) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MRDL (Maximum Residual Disinfectant Level) - The highest level of a disinfectant (chlorine) allowed in drinking water. There is convincing scientific evidence that the addition of a disinfectant is required for the control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal) - The level of drinking water disinfectant below which there is no known or expected risk to health. MRDLG's do not reflect the benefits of the use of disinfectants to control microbial contamination.

ND (Not Detected) - Concentration too low to be detected

NTU (Nephelometric Turbidity Units) - A measure of water clarity

pCi/L (Picocuries per liter) - A measure of the radioactivity in water

PPM (Parts Per Million) - Or milligrams per liter (mg/L), 1mg/L = 1 ppm

PPB (Parts Per Billion) - Or micrograms per liter (µg/L), 1000 ppb = 1 ppm

PQL (Practical Quantitation Limit) - The minimum concentration of an analyte (substance) that can be measured with a high degree of confidence that the analyte is present at or above that concentration

UCMR4 (Unregulated Contaminant Monitoring Rule #4) - Non-regulated compounds that can be found in water

POSSIBLE HEALTH EFFECTS OF CONTAMINENTS IN DRINKING WATER

ARSENIC If Arsenic is less than or equal to the MCL, your drinking water meets EPA's standards. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems. For more Information about Arsenic: http://legacy.azdeq.gov/environ/water/dw/download/epa_arsenic.pdf

BARIUM Some people who drink water containing Barium in excess of the MCL over many years may experience an increase in blood pressure.

CHLORINE Some people who use water containing Chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing Chloramines well in excess of the MRDL could experience stomach discomfort or anemia.

COPPER & LEAD Copper is an essential nutrient however if present in drinking water, short term exposure to elevated levels of copper could cause gastrointestinal distress and prolonged use above the action level could cause liver or kidney damage in some people. If present, elevated levels of lead could cause health issues especially for pregnant women and young children. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development, slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure. Lead primarily comes from erosion of components associated with service lines and home plumbing. If your water has been sitting for several hours flushing your tap for 30 seconds or more prior to drinking or cooking can minimize the potential for exposure. Information on lead in drinking water and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at https://www.epa.gov/safewater/lead

CRYPTOSPORIDIUM Cryptosporidium is an emerging pathogen resistant to chlorination and can appear even in high quality water supplies. New regulations from the EPA require water systems to monitor Cryptosporidium and adopt a range of treatment options based on source water Cryptosporidium concentrations. The City of Prescott has not detected or had any occurrence of Cryptosporidium.

DISINFECTION BY-PRODUCTS Some people who drink water containing Total trihalomethanes and Haloacetic acids in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of cancer.

NITRATES Nitrates are inorganic substances that are monitored due to run off from fertilizer use. Nitrates in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. "High nitrate levels in drinking water can cause blue baby syndrome." The City of Prescott nitrate levels are well below the maximum contaminant level at 1.5 ppm. (See chart on Page 5) Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, and detected nitrate levels are above 5 ppm, you should ask advice from your health care provider. For more information on nitrates: http://www.epa.gov/nitratefaqs

RADIONUCLIDES are a group of contaminates consisting of Alpha and Beta/Photon emitters, combined Radium 226 & 228 and Uranium. Certain minerals are radioactive and may emit a form of radiation known as Alpha, Beta or Photon radiation. Some people who drink water in excess of the MCL for this group of contaminates over many years may have an increased risk of getting cancer or in some cases kidney problems. Radon gas is a colorless, odorless and tasteless gas that comes from the natural breakdown of Uranium. Although there is no federal standard for Radon in drinking water The City of Prescott does monitor the Radionuclide group and surpasses mandatory health levels established by the EPA and ADEQ. For more information on Radon: https://www.epa.gov/radon

FREQUENTLY ASKED WATER QUESTIONS & TOPICS

GENERAL WATER CONSUMPTION: Statistics show that U.S. consumers average between 100 to 160 gallons, per person, per day for all uses. Usage can vary greatly based on an individual's particular habits. Between 2 quarts and 1 gallon are consumed for cooking, drinking water and prepared beverages such as coffee and tea. The remainder includes household cleaning, bathing, laundry, outdoor watering and more. Most new low use toilets use about 1.5 gallons per flush, compared to older ones using about 4 gallons per flush. Showers can use anywhere from 2 to 5 gallons per minute and a bath can consume 35+ gallons per use depending on tub size. Outdoor usage generally accounts for the largest volume of water consumed especially during Spring and Summer months.

WATER HARDNESS: Hardness in drinking water is caused by calcium and magnesium which are two non-toxic, naturally occurring minerals in water. They enter water mainly through erosion and weathering of rocks. The more these two minerals are in water, the harder the water. Water hardness is usually expressed in parts per million (ppm) or grains per gallon of dissolved calcium and magnesium carbonate. The City's water is considered moderately hard, averaging 75 to 130 ppm, which equals 4.3 to 7.6 grains per gallon. In hard water, lathering of soap for washing is more difficult to do and cleaning becomes less efficient. As a result, more soap or detergent is needed to get things clean, be it your hands, hair, or your laundry. Dull hair, spots on dishes, glasses, faucets and film on shower doors can be related to water that is considered hard in nature.

Classification	mg/l or ppm	grains/gal
Soft	0 - 17.1	0 - 1
Slightly hard	17.1 - 60	1 - 3.5
Moderately hard	60 - 120	3.5 - 7.0
Hard	120 - 180	7.0 - 10.5
Very Hard	180 & over	10.5 & over

WATER SOFTENERS: A water softener can reduce the formation of scale in your water system to make washing and cleaning easier. Depending on the type of system selected, they replace the calcium and magnesium with sodium or potassium which dissolve in water and are less likely to leave deposits. Softening does not however remove all dissolved minerals such as sodium, sulfate, chloride and bicarbonates therefore deposits, scale and film could still be present. If a softening system appears to be the choice for you, make sure you select a system that is least likely to impact the environment. The discharge stream by-products that are produced flow directly to the City's wastewater treatment facilities.

WHY IS MY WATER CLOUDY? Oxygen in the water! Sometimes water fresh from the tap appears cloudy. Within a minute or two, the cloudiness rises toward the top of a glass and before long the whole glass is crystal clear. This is caused by excess oxygen escaping from the water. Changes in water temperature and pressure can cause the dissolved oxygen to reach a supersaturated state where more oxygen is in the water than it can hold. When water passes through a faucet, the disturbance is enough to release the excess oxygen out of the water, forming microscopic bubbles. The bubbles are so tiny that it takes them a long time to rise through the water. No harm will come from using oxygenated water, and you need not take any corrective action if you experience it.

WATER PRESSURE: The most common question regarding water is about a change in water pressure to the house. Low water pressure to the home can be caused by many things: Mineral deposit build-up can reduce the flow in domestic pipes and faucet aerators may become plugged if not regularly cleaned and maintained. If a water heater is not regularly maintained per factory specifications, the inside can degrade causing pieces of scale, minerals and particulates to dislodge and migrate through a home's water system. Another common cause of water pressure concerns can be related to the setting of a water pressure regulator valve (PRV). A previous home owner may have had a regulator set to limit the pressure of water delivered from the municipal supply line. A PRV factory setting is 50 PSI. It is important to understand that a PRV has a shelf life and can be damaged directly from the manufacturer. A failing PRV can cause low or high water pressure. Installing a PRV for each property ensures that the pressure coming from the municipal supply line is reduced to an acceptable pressure. If the PRV is placed at the meter, instead of just at the entrance to the building, then the regulator will also protect the supply line to the house and many parts of the property's irrigation system. An added benefit of regulating the pressure to the irrigation system is that it will help reduce misting, thereby increasing the efficiency of the irrigation system—saving water and money.

Clogged Aerator

Pressure Regulator Valve

Where to Learn More about Your Drinking Water

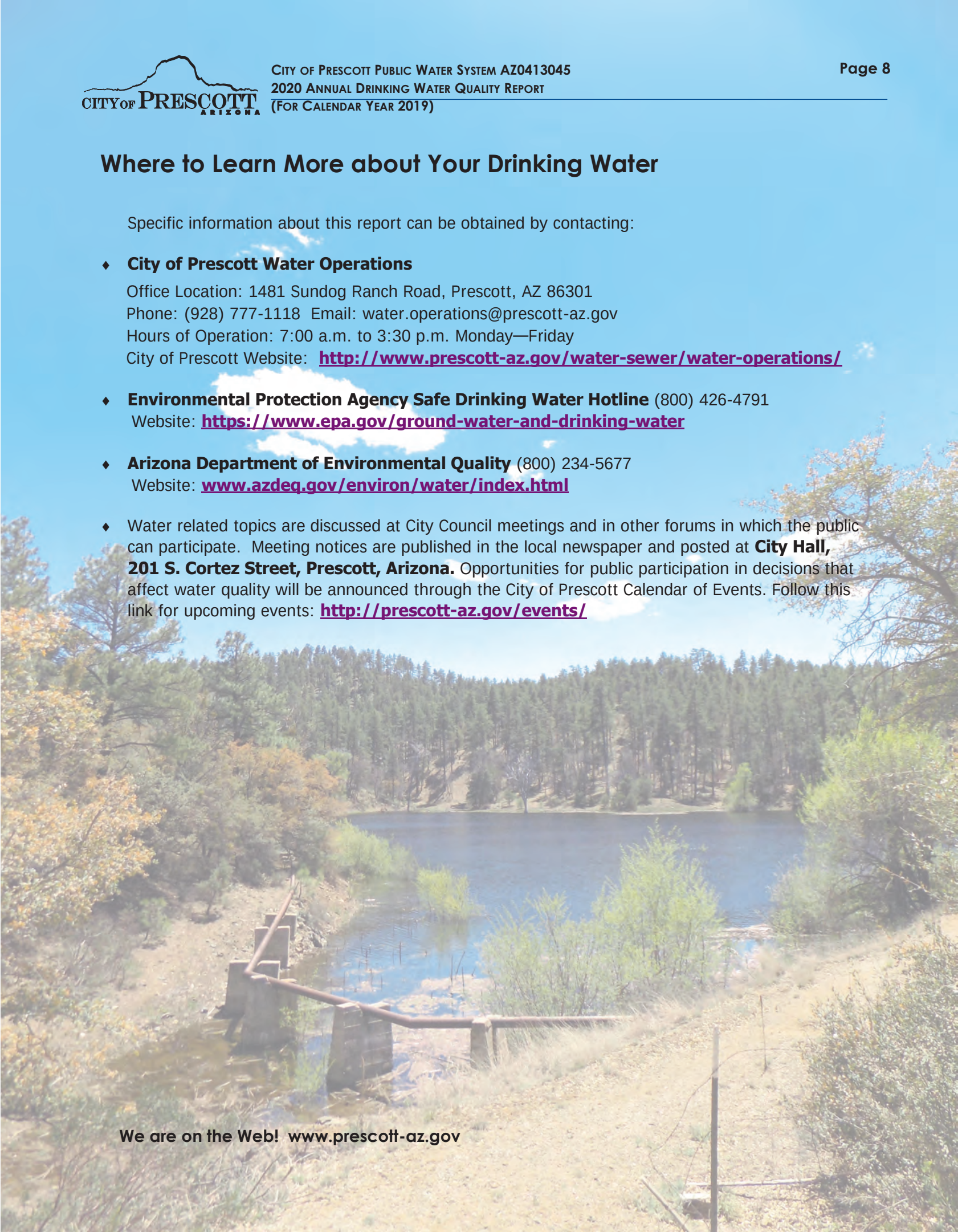
Specific information about this report can be obtained by contacting:

- **City of Prescott Water Operations**
  Office Location: 1481 Sundog Ranch Road, Prescott, AZ 86301
  Phone: (928) 777-1118 Email: water.operations@prescott-az.gov
  Hours of Operation: 7:00 a.m. to 3:30 p.m. Monday—Friday
  City of Prescott Website: **http://www.prescott-az.gov/water-sewer/water-operations/**

- **Environmental Protection Agency Safe Drinking Water Hotline** (800) 426-4791
  Website: **https://www.epa.gov/ground-water-and-drinking-water**

- **Arizona Department of Environmental Quality** (800) 234-5677
  Website: **www.azdeq.gov/environ/water/index.html**

- Water related topics are discussed at City Council meetings and in other forums in which the public can participate. Meeting notices are published in the local newspaper and posted at **City Hall, 201 S. Cortez Street, Prescott, Arizona.** Opportunities for public participation in decisions that affect water quality will be announced through the City of Prescott Calendar of Events. Follow this link for upcoming events: **http://prescott-az.gov/events/**



MATRIXNEWORLD
Engineering Progress

APPENDIX C

Aquifer Testing Data

CLEAR CREEK ASSOCIATES

Practical Solutions
in Groundwater Science
July 12, 2007

6155 E. Indian School Rd., Suite 200
Scottsdale, Arizona 85251
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480-659-7143 fax
www.clearcreekassociates.com

Darlene Sumpter-King
Phoenix Active Management Area
Arizona Department of Water Resources
3550 North Central Ave
Phoenix, Arizona 85012

Hydrotest Data Results for Wells No. 55-211620 and 55-212087
Hydrotest Permit No. 59-211619 and No. 59-212086

Dear Darlene:

The Arizona Department of Water Resources previously issued Hydrologic Test Permit No. 59-211619 and No. 59-212086 to allow for the testing of two wells (Registration No. 55-211620 and 55-212087 respectively). The legal location for Prescott Airport Well No.1 (55-211620) is the NE-¼ (10-acre) of the NW-¼ (40-acre) of the NW-¼ (160-acre) of Section 30, Township 15 North, Range 1 West also referenced as B(15-1)30bba). The legal location of Prescott Airport Well No.2 (55-212087) is the NW ¼ of the NE ¼ of the NE ¼ of Section 36, in Township 15 North, Range 2 West, also referenced B(15-2)36aab (Figure 1). The purpose of this letter is to satisfy the hydrologic testing permit condition by providing the results of the hydrologic test data for both wells, which are referred to as Prescott Airport Well #1 and Prescott Airport Well #2.

Prescott Airport Well #1 was installed by Layne Christensen Drilling Company in 2006. The well is cased to a depth of 990 feet below land surface (bls) with 18.625-inch diameter high strength low alloy (HSLA) steel casing, and has louvered screen (0.050-inch slots) from 800 feet to 980 feet bls. Due to the limited production capacity of this well, step and constant rate aquifer tests were not conducted. From the development activities, this well is estimated to have a production capacity of 100-200 gallons per minute. It is estimated that approximately 20,000 gallons of water was pumped from this well during development.

The Prescott Airport Well #2 was installed by Layne Christensen Drilling Company in 2006. The well is cased to a depth of 920 feet bls with 18.625-inch diameter HSLA steel casing, and has louvered screen (0.050-inch slots) from 550 feet to 900 feet bls.

The hydrologic testing performed under Hydrologic Test Permit No. 59-212087 included a 10-hour step-rate pumping test and a 24-hour constant-rate aquifer test. The flow rate was monitored using two in-line totalizing flow meters. Water levels were measured with an electric sounder.

A 10-hour step-rate pumping test was performed on September 11, 2006, on Prescott Airport Well #2, which included pumping for 2 hours at an average rate of approximately 698 gallons per minute (gpm), 2 hours at an average rate of approximately 939 gpm, 2 hours at an average rate of approximately 1128 gpm, 2 hours at an average rate of approximately 1323 gpm, and 2 hours at an average rate of approximately 1513 gpm. The static water level was measured at 453.35 feet below land surface (bls) prior to starting the pump. The water-level drawdown measurements at the end of steps 1, 2, 3, 4, and 5 were 34.00 feet, 57.40, 77.85, 101.00 and 127.9 feet, respectively. The resultant specific capacity values at the end of each step were calculated to be 20.53 gpm/ft, 16.36 gpm/ft, 14.48 gpm/ft, 13.10 gpm/ft, and 11.83 gpm/ft for each step, respectively. The test data are included as Table 1, and a plot of the data is included as Figure 2.

A 24-hour constant-rate aquifer test was performed on September 12, 2006. The static water level was measured at 453.2 feet bls prior to starting the pump. The discharge rate averaged approximately 1150 gpm over the 24-hour period. The maximum drawdown measured during the 24-hour constant rate test was 92.45 feet bls, which equates to a pumping water level of about 545.65 feet bls, and a specific capacity of approximately 12.44 gpm/ft. The numerical data of the constant-rate aquifer test (including recovery) are presented in Table 2. An analysis of the Cooper-Jacob Plot (presented on Figure 3) suggests an aquifer transmissivity of approximately 20,940 gallons per day per foot (gpd/ft) for the aquifer penetrated by the Prescott Airport Well#2. Analysis of the Theis Recovery Plot (presented on Figure 4) suggests an aquifer transmissivity of approximately 17,600 gpd/ft for the aquifer penetrated by the Prescott Airport Well No. 2, which is fairly consistent with the transmissivity value indicated by the pumping data (Figure 3). Since the water-level recovery data are not affected by any perturbations from the pump equipment, the Theis Recovery Plot is generally considered more representative of the aquifer characteristics than the Cooper-Jacob Plot. Therefore, about 17,600 gpd/ft is considered a reasonable estimate of the transmissivity for the Prescott Airport Well#2.

The total volume of water pumped during this hydrologic testing was calculated as follows:

Step-Rate Pumping Test:	672,150 gallons
Constant-Rate Aquifer Test:	1,683,600 gallons
Total Volume Pumped:	2,355,750 gallons

If you have any questions regarding the results of the hydrologic testing, or would like to request further information, please contact me at (480) 659-7131.

Sincerely,

CLEAR CREEK ASSOCIATES, PLC.

David Wrzosek, R.G.
Project Hydrogeologist

REGISTERED GEOLOGIST
CERTIFICATE NO.
45434
DAVID J.
WRZOSEK
Date Signed 11-12-07
ARIZONA, U.S.A.

cc: Mark Courtney, Carollo Engineers
Bruce Canavan, City of Prescott
Attachments

TABLE 1
Prescott Airport Well #2
Step-Test Data

Project:	Prescott Airport Well #2	Project Number:	#006030		Static Water Level:	423.35	Totalizer start =	537525.5
Well Location:	B(15-2) 36aab	Well No.:	55-212087		Measuring Point:	Top of Sounding Tube	Totalizer end =	544247
Well Diameter:	18 5/8-in OD	Measured By:	MWF		Elevation Measuring Point:	0.9	Initial Sounder	554.3
Pump Setting:	604	Pump On Date & Time:	9/11/2006	7:15	Available Drawdown:	273.65	Correction =	100.9
Screen Interval(s):	550-900	Pump Off Date & Time:	9/11/2006	17:15	Distance From Pumping Well	-	SWL =	453.35
How Q Measured:	McCrometer with Totalizer	Duration of Test:	10 Hours		Initial Totalizer Reading:	537525.5		

Step-Rate Discharge Data
Test Performed on September 11, 2006
Carollo Engineers-Prescott Airport Well #2
Prescott, Arizona

	Step Time (min)	Test Time (min)	Sounder Reading (feet)	Correction (feet)	Water Level (ft bls)	Drawdown (feet)	Discharge (gpm)	Spec. Cap. (gpm / ft)	Totalizer (gal x 100)
	1	1	577.80	100.90	476.90	23.55	#REF!	N.A.	537526
Step 1	3	3	562.05	100.90	461.15	7.80	698	89.48	
	4	4	574.85	100.90	473.95	20.60	698	33.88	
	5	5	578.00	100.90	477.10	23.75	698	29.39	
	6	6	579.15	100.90	478.25	24.90	698	28.03	
	7	7	580.20	100.90	479.30	25.95	698	26.89	537587
	8	8	580.90	100.90	480.00	26.65	698	26.19	
	9	9	581.30	100.90	479.30	25.95	698	26.89	
	10	10	581.65	100.90	480.00	26.65	698	26.19	537590
	12	12	582.30	100.90	480.40	27.05	698	25.80	
	14	14	582.75	100.90	480.75	27.40	698	25.47	537616
	16	16	583.05	100.90	481.40	28.05	698	24.88	537631
	18	18	583.40	100.90	481.85	28.50	698	24.49	537645.5
	20	20	583.70	100.90	482.80	29.45	698	23.70	537659
	25	25	584.20	100.90	483.30	29.95	698	23.30	537598
	30	30	584.60	100.90	483.70	30.35	698	23.00	
	40	40	585.50	100.90	484.60	31.25	698	22.33	537805
	50	50	586.10	100.90	485.20	31.85	698	21.91	537871.5
	60	60	586.70	100.90	485.80	32.45	698	21.51	537943
	75	75	587.50	100.90	486.60	33.25	698	20.99	538050
	90	90	588.10	100.90	487.20	33.85	698	20.62	538155
	105	105	588.80	100.90	487.90	34.55	698	20.20	538258
	120	120	588.25	100.90	487.35	34.00	698	20.53	538363
Step 2	2	122	596.00	100.90	497.10	43.75	939	21.47	-
	3	123	600.85	100.90	499.95	46.60	939	20.15	-
	4	124	602.40	100.90	501.50	48.15	939	19.51	-
	5	125	603.40	100.90	502.50	49.15	939	19.11	-
	6	126	604.05	100.90	503.15	49.80	939	18.86	-
	7	127	604.50	100.90	503.60	50.25	939	18.69	538430.0
	8	128	604.80	100.90	503.90	50.55	939	18.58	
	9	129	605.18	100.90	504.28	50.93	939	18.44	
	10	130	605.30	100.90	504.40	51.05	939	18.40	
	12	132	605.65	100.90	504.75	51.40	939	18.27	538477.0
	14	134	605.90	100.90	505.00	51.65	939	18.18	
	16	136	606.25	100.90	505.35	52.00	939	18.06	538514.0
	18	138	606.50	100.90	505.60	52.25	939	17.97	
	20	140	606.65	100.90	505.75	52.40	939	17.92	
	25	145	607.05	100.90	506.15	52.80	939	17.79	538597.0
	40	160	608.05	100.90	507.15	53.80	939	17.46	538739.0
	50	170	608.55	100.90	507.65	54.30	939	17.30	538832.0
	60	180	609.25	100.90	508.35	55.00	939	17.08	538927.0
	75	195	609.85	100.90	508.95	55.60	939	16.89	539068.0
	90	210	610.50	100.90	509.60	56.25	939	16.70	539206.0
	105	225	611.15	100.90	510.25	56.90	939	16.51	539350.0
	120	240	611.65	100.90	510.75	57.40	939	16.36	539490.0
Step 3	2	242	620.45	100.90	519.55	66.20	1128	17.03	-
	3	243	622.45	100.90	521.55	68.20	1128	16.53	-
	4	244	623.65	100.90	522.75	69.40	1128	16.25	-
	5	245	624.30	100.90	523.40	70.05	1128	16.10	-
	6	246	624.90	100.90	524.00	70.65	1128	15.96	539556.0
	7	247	625.20	100.90	524.30	70.95	1128	15.89	-
	8	248	625.55	100.90	524.65	71.30	1128	15.81	-
	9	249	625.85	100.90	524.95	71.60	1128	15.75	-
	10	250	626.05	100.90	525.15	71.80	1128	15.70	539605.0
	12	252	626.50	100.90	525.60	72.25	1128	15.61	-
	14	254	626.70	100.90	525.80	72.45	1128	15.56	539650.0
	16	256	627.00	100.90	526.10	72.75	1128	15.50	-
	18	258	627.20	100.90	526.30	72.95	1128	15.46	-
	20	260	627.35	100.90	526.45	73.10	1128	15.42	539719.0
	30	270	628.25	100.90	527.35	74.00	1128	15.24	539829.0
	40	280	628.90	100.90	528.00	74.65	1128	15.10	539943.0
	50	290	629.50	100.90	528.60	75.25	1128	14.98	540053.0
	60	300	630.00	100.90	529.10	75.75	1128	14.88	540167.0
	90	330	631.25	100.90	530.35	77.00	1128	14.64	540505.0
	105	345	631.80	100.90	530.90	77.55	1128	14.54	540674.5
	120	360	632.10	100.90	531.20	77.85	1128	14.48	540843.0
Step 4	2	362	641.00	100.90	540.10	86.75	1323	15.25	-
	3	363	644.40	100.90	543.50	90.15	1323	14.68	-
	4	364	645.60	100.90	544.70	91.35	1323	14.49	-
	5	365	646.50	100.90	545.60	92.25	1323	14.35	-
	6	366	647.50	100.90	546.60	93.25	1323	14.19	-
	7	367	647.75	100.90	546.85	93.50	1323	14.15	-
	8	368	648.25	100.90	547.35	94.00	1323	14.08	-
	9	369	648.55	100.90	547.65	94.30	1323	14.03	540961.0

TABLE 1
Prescott Airport Well #2
Step-Test Data

	Step-Rate Discharge Data								
	Test Performed on September 11, 2006								
	Carollo Engineers-Prescott Airport Well #2								
	Prescott, Arizona								
	Step Time	Test Time	Sounder Reading	Correction	Water Level	Drawdown	Discharge	Spec. Cap.	Totalizer
	(min)	(min)	(feet)	(feet)	(ft bls)	(feet)	(gpm)	(gpm / ft)	(gal x 100)
	10	370	648.90	100.90	548.00	94.65	1323	13.98	-
	12	372	649.35	100.90	548.45	95.10	1323	13.92	-
	16	376	650.05	100.90	549.15	95.80	1323	13.81	541054.0
	18	378	650.20	100.90	549.30	95.95	1323	13.79	541081.0
	20	380	650.50	100.90	549.60	96.25	1323	13.75	541108.0
	25	385	650.80	100.90	549.90	96.55	1323	13.71	-
	40	400	652.05	100.90	551.15	97.80	1323	13.53	541373.0
	50	410	652.55	100.90	551.65	98.30	1323	13.46	541505.0
	60	420	653.00	100.90	552.10	98.75	1323	13.40	541638.0
	75	435	653.60	100.90	552.70	99.35	1323	13.32	541836.0
	90	450	654.30	100.90	553.40	100.05	1323	13.23	542033.0
	105	465	654.70	100.90	553.80	100.45	1323	13.17	542235.0
	120	480	655.25	100.90	554.35	101.00	1323	13.10	542431.0
Step 5	2	481	665.35	100.90	564.45	111.10	1513	13.62	-
	3	482	668.40	100.90	567.50	114.15	1513	13.26	-
	4	483	670.30	100.90	569.40	116.05	1513	13.04	-
	5	484	671.40	100.90	570.50	117.15	1513	12.92	-
	6	485	672.50	100.90	571.60	118.25	1513	12.80	542520.0
	7	486	673.10	100.90	572.20	118.85	1513	12.73	-
	8	487	673.60	100.90	572.70	119.35	1513	12.68	-
	9	488	674.00	100.90	573.10	119.75	1513	12.64	-
	10	489	674.35	100.90	573.45	120.10	1513	12.60	-
	12	491	675.00	100.90	574.10	120.75	1513	12.53	542610.0
	14	493	675.55	100.90	574.65	121.30	1513	12.48	542640.0
	16	495	675.85	100.90	574.95	121.60	1513	12.45	-
	18	497	676.26	100.90	575.35	122.00	1513	12.40	542700.0
	20	499	676.55	100.90	575.65	122.30	1513	12.37	542732.0
	25	504	677.00	100.90	576.10	122.75	1513	12.33	542806.0
	30	509	677.55	100.90	576.65	123.30	1513	12.27	542882.0
	40	519	678.15	100.90	577.25	123.90	1513	12.21	543033.0
	50	529	678.95	100.90	578.05	124.70	1513	12.14	543182.0
	60	539	679.55	100.90	578.65	125.30	1513	12.08	543333.0
	90	569	680.95	100.90	580.05	126.70	1513	11.94	543784.0
	105	584	681.65	100.90	580.75	127.40	1513	11.88	544010.0
	120	599	682.15	100.90	581.25	127.90	1513	11.83	544247.0

TABLE 2
Prescott Airport Well #2
24-Hour Aquifer Test

Aquifer Test Data									Corrected SWL (feet bls):	
Project: Prescott Airport Well #2	Project No.:	068030							Measuring Point:	
Well Location: B(15-2)36aab	Well No.:	55-212087							Correction (feet):	100.9
Well Diameter: 18 5/8" OD	Measured By:	MWF							Available Drawdown (feet):	
Pump Setting: 694 ft bls	Pump On Date:	09/12/06	Time: 07:00					Totalizer Start (X1000 gal)) =		
Screen Interval: 550-900	Pump off Date:	09/13/06	Time: 07:36					Totalizer End (X1000 gal) =		Approx. 16,836,000 gal. total
How Q Measured: totalizer, McCrometer	Duration of Aquifer Test:		24 hr and 36 min							

Time of Measurment	Time since Pumping Started (t) (min)	Recovery Time (t') (min)	t/t'	Sounder Reading (feet)	Correction (feet)	Water Level (feet)	Drawdown (feet)	Discharge Rate (gpm) from McCrometer	Totalizer Readings (x 100 gal)	Specificic Capacity Readings (gpm/ft)	Remarks
7:01	1			582.40	100.9	481.50	28.30	-	-	N.A.	
7:02	2			590.65	100.9	489.75	36.55	-	-	-	
7:03	3			602.40	100.9	501.50	48.30	-	-	-	
7:04	4			608.55	100.9	507.65	54.45	1150	544277	21.12	
7:05	5			611.10	100.9	510.20	57.00	1150	-	20.18	
7:06	6			613.15	100.9	512.25	59.05	1150	-	19.48	
7:07	7			614.70	100.9	513.80	60.60	1150	544312	18.98	
7:08	8			615.70	100.9	514.80	61.60	1150	-	18.67	
7:09	9			616.75	100.9	515.85	62.65	1150	-	18.36	
7:10	10			617.55	100.9	516.65	63.45	1150	544347	18.12	
7:12	12			618.70	100.9	517.80	64.60	1150	-	17.80	
7:14	14			619.55	100.9	518.65	65.45	1150	-	17.57	
7:16	16			620.50	100.9	519.60	66.40	1150	544416	17.32	
7:18	18			621.00	100.9	520.10	66.90	1150	544439	17.19	
7:20	20			621.65	100.9	520.75	67.55	1150	544463	17.02	
7:25	25			622.70	100.9	521.80	68.60	1150	544519	16.76	
7:30	30			623.65	100.9	522.75	69.55	1150	544578	16.53	
7:40	40			625.00	100.9	524.10	70.90	1150	544694.5	16.22	
7:50	50			626.25	100.9	525.35	72.15	1150	544809	15.94	
8:00	60			627.30	100.9	526.40	73.20	1150	544924	15.71	eC=310.7,T=66.0,pH=8.32
8:15	75			628.60	100.9	527.70	74.50	1150	545099	15.44	
8:30	90			629.55	100.9	528.65	75.45	1150	545271	15.24	
8:45	105			630.55	100.9	529.65	76.45	1150	545446	15.04	
9:00	120			631.30	100.9	530.40	77.20	1150	545618	14.90	eC=307.9,T=66.9,pH=8.31
9:15	135			632.10	100.9	531.20	78.00	1150	545791	14.74	
9:30	150			632.70	100.9	531.80	78.60	1150	545965	14.63	
9:45	165			633.35	100.9	532.45	79.25	1150	546138	14.51	
10:00	180			633.95	100.9	533.05	79.85	1150	546310	14.40	eC=306.2,T=67.5,pH=8.32
10:15	195			634.45	100.9	533.55	80.35	1150	546482	14.31	
10:30	210			635.00	100.9	534.10	80.90	1150	546655	14.22	
10:45	225			635.45	100.9	534.55	81.35	1150	546828	14.14	
11:00	240			635.85	100.9	534.95	81.75	1150	547001	14.07	eC=305.1,T=68.2,pH=8.31
11:15	255			636.30	100.9	535.40	82.20	1150	547174	13.99	
11:30	270			636.70	100.9	535.80	82.60	1150	547346	13.92	
12:00	300			637.40	100.9	536.50	83.30	1150	547689	13.81	eC=304.3,T=68.4,pH=8.31
12:30	330			638.10	100.9	537.20	84.00	1150	-	13.69	
13:00	360			638.60	100.9	537.70	84.50	1150	548377	13.61	eC=304.2T=68.3,pH=8.29
13:30	390			541.22	2.92	538.30	85.10	1150	548719	13.51	Layne Opperator Readings
14:00	420			541.68	2.92	538.76	85.56	1150	549065	13.44	
14:30	450			542.18	2.92	539.26	86.06	1150	549408	13.36	
15:00	480			542.75	2.92	539.83	86.63	1150	549770	13.27	
15:30	510			543.00	2.92	540.08	86.88	1150	550100	13.24	
16:00	540			543.50	2.92	540.58	87.38	1150	550444	13.16	
16:30	570			543.73	2.92	540.81	87.61	1150	550786	13.13	
17:00	600			544.00	2.92	541.08	87.88	1150	551131	13.09	
17:30	630			544.40	2.92	541.48	88.28	1150	551468	13.03	
18:00	660			544.69	2.92	541.77	88.57	1150	551811	12.98	
19:00	720			545.04	2.92	542.12	88.92	1150	552489	12.93	
20:00	780			545.57	2.92	542.65	89.45	1150	553712	12.86	

TABLE 2
Prescott Airport Well #2
24-Hour Aquifer Test

Time of Measurment	Time since Pumping Started (t) (min)	Recovery Time (t') (min)	t/t'	Sounder Reading (feet)	Correction (feet)	Water Level (feet)	Drawdown (feet)	Discharge Rate (gpm) from McCrometer	Totallzer Readings (x 100 gal)	Specificic Capacity Readings (gpm/ft)	Remarks
21:00	840			545.98	2.92	543.06	89.86	1150	553855	12.80	
22:00	900			546.37	2.92	543.45	90.25	1150	554537	12.74	
23:00	960			546.71	2.92	543.79	90.59	1150	555219	12.69	
0:00	1020			547.05	2.92	544.13	90.93	1150	555903	12.65	
1:00	1080			547.33	2.92	544.41	91.21	1150	556586	12.61	
2:00	1140			547.56	2.92	544.64	91.44	1150	557272	12.58	
3:00	1200			547.77	2.92	544.85	91.65	1150	557953	12.55	
4:00	1260			547.98	2.92	545.06	91.86	1150	558631	12.52	
5:00	1320			548.19	2.92	545.27	92.07	1150	559368	12.49	
6:00	1380			548.35	2.92	545.43	92.23	1150	559991	12.47	▼
7:03	1443			646.50	100.9	545.60	92.40	1150	560706	12.45	MWF Readings
7:36	1476			646.55	100.9	545.65	92.45	1150	561083	12.44	Pump off
7:37	1477	1	1477.00	595.70	100.9	494.80	41.60				Begin recovery
7:38	1478	2	739.00	584.45	100.9	483.55	30.35				
7:39	1479	3	493.00	583.00	100.9	482.10	28.90				
7:40	1480	4	370.00	584.35	100.9	483.45	30.25				
7:41	1481	5	296.20	584.00	100.9	483.10	29.90				
7:42	1482	6	247.00	583.30	100.9	482.40	29.20				
7:43	1483	7	211.86	582.60	100.9	481.70	28.50				
7:44	1484	8	185.50	582.15	100.9	481.25	28.05				
7:45	1485	9	165.00	581.70	100.9	480.80	27.60				
7:46	1486	10	148.60	581.45	100.9	480.55	27.35				
7:48	1488	12	124.00	580.75	100.9	479.85	26.65				
7:50	1490	14	106.43	580.25	100.9	479.35	26.15				
7:52	1492	16	93.25	579.75	100.9	478.85	25.65				
7:54	1494	18	83.00	579.40	100.9	478.50	25.30				
7:56	1496	20	74.80	578.90	100.9	478.00	24.80				
8:01	1501	25	60.04	578.10	100.9	477.20	24.00				
8:06	1506	30	50.20	577.20	100.9	476.30	23.10				
8:16	1516	40	37.90	575.80	100.9	474.90	21.70				
8:26	1526	50	30.52	574.60	100.9	473.70	20.50				
8:36	1536	60	25.60	573.70	100.9	472.80	19.60				
8:51	1551	75	20.68	572.40	100.9	471.50	18.30				
9:06	1566	90	17.40	571.15	100.9	470.25	17.05				
9:21	1581	105	15.06	570.15	100.9	469.25	16.05				
9:36	1596	120	13.30	569.15	100.9	468.25	15.05				
9:51	1611	135	11.93	568.40	100.9	467.50	14.30				
10:06	1626	150	10.84	567.60	100.9	466.70	13.50				
10:21	1641	165	9.95	567.00	100.9	466.10	12.90				

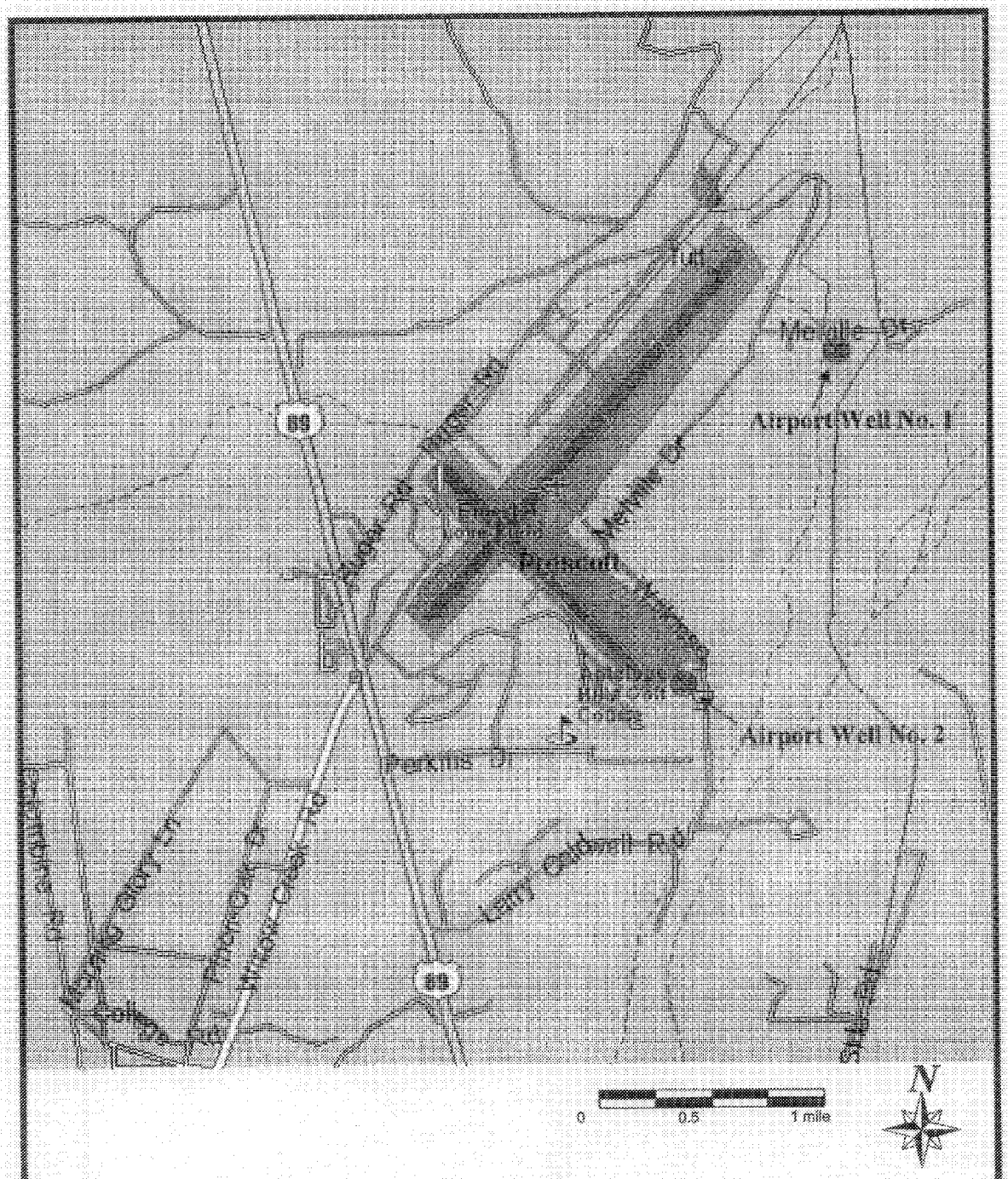

FIGURE 1
LOCATION MAP
Prescott Airport Wells No. 1 and No. 2
City of Prescott
Prescott, Arizona

CLEAR CREEK ASSOCIATES

Production\Carolie\Prescott Airport Well\Tech Spec\Fig 1 Location Map addendum

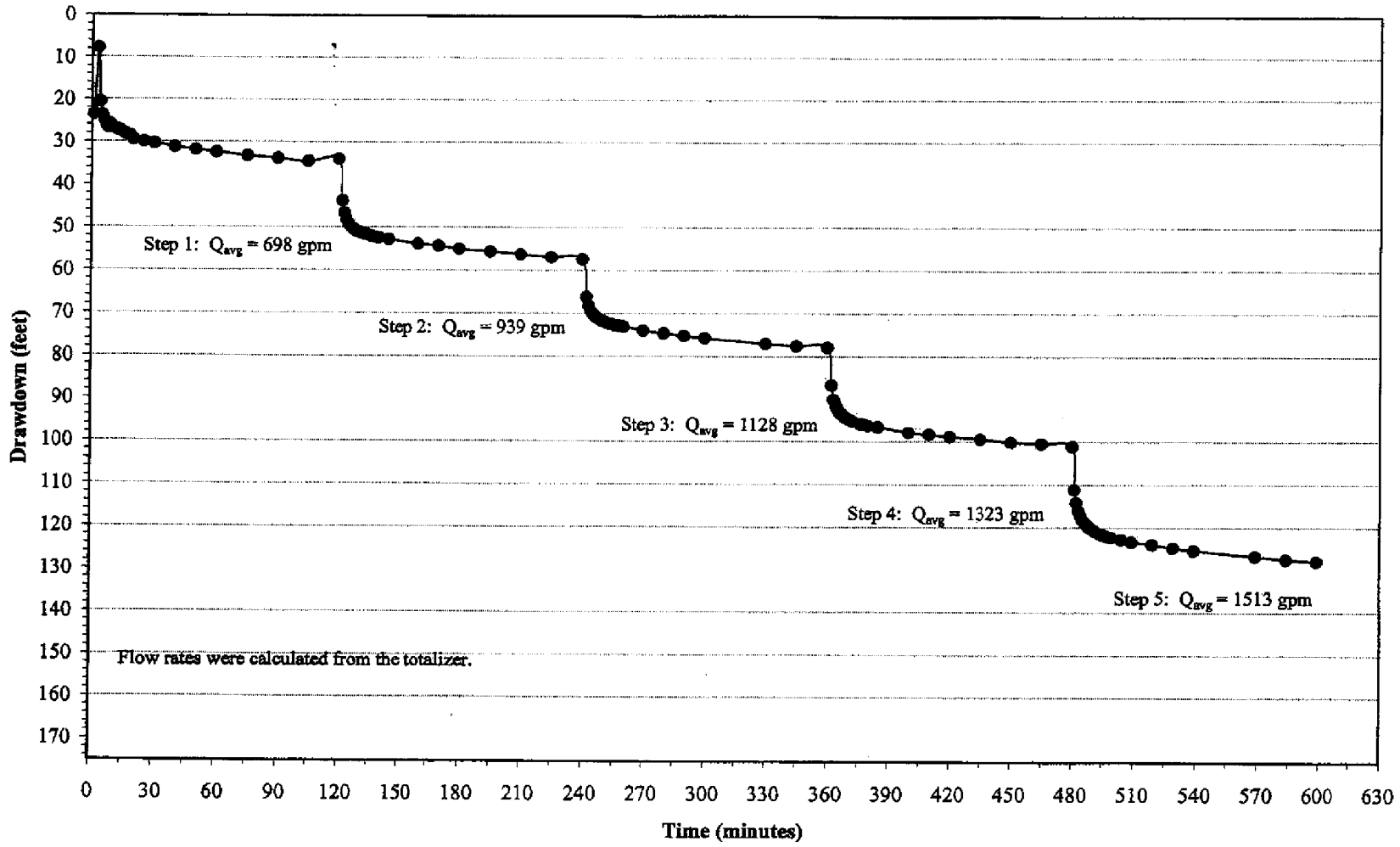

FIGURE 2
Step-Rate Pumping Test
Prescott Airport Well #2

Carollo Engineers
Prescott, Arizona
Test Performed 9/11/06

CLEAR CREEK ASSOCIATES

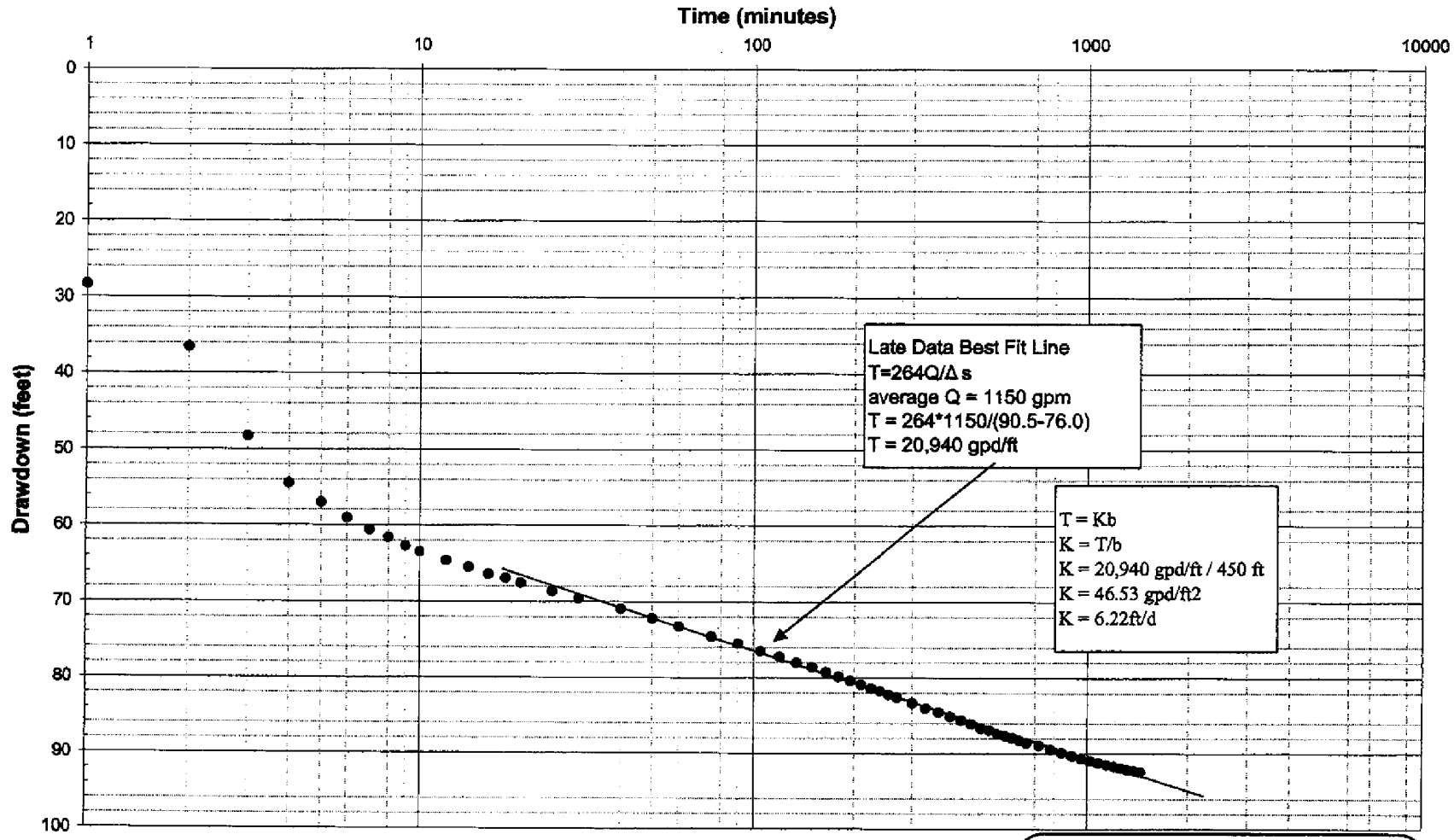

FIGURE 3
COOPER-JACOB PLOT
Carollo Engineers
Prescott Airport Well #2
Prescott, Arizona

CLEAR CREEK ASSOCIATES

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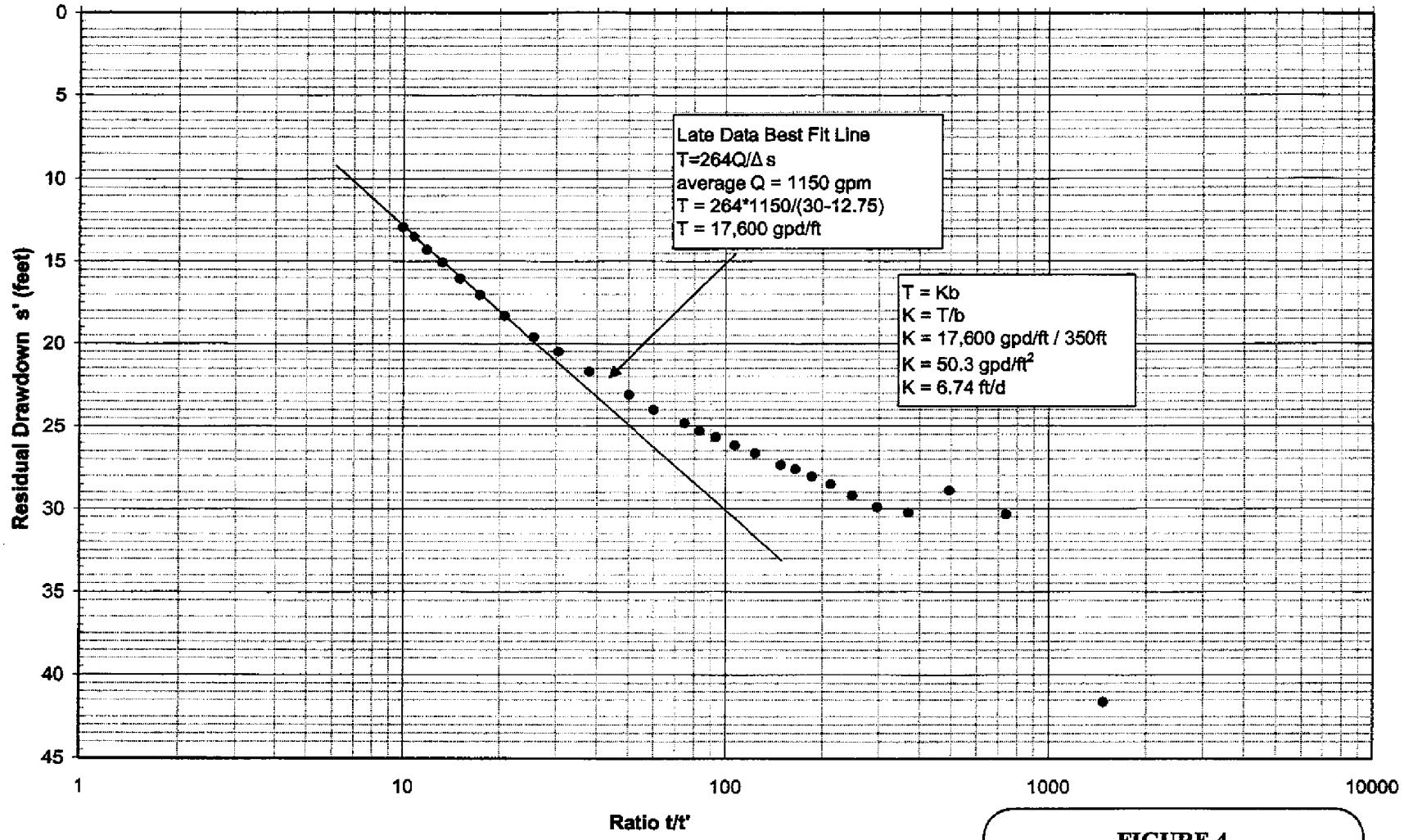

FIGURE 4
THEIS RECOVERY PLOT
Carollo Engineers
Prescott Airport Well #2
Prescott, Arizona

CLEAR CREEK ASSOCIATES

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Matrix New World Engineering
Southwest Groundwater
123 E. Goodwin Street, Ste 200
Prescott, AZ 86303
928.771.0610 928.771.0748
matrixneworld.com WBE/DBE

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Southwest Groundwater

May 14, 2019

Arizona Department of Water Resources
Groundwater Permitting and Wells Unit
1110 W. Washington St., Suite 310
Phoenix, AZ 85007-2952

SUBJECT: WELL SPACING ANALYSIS – AIRPORT WELL NO. 5 (55-229228)
NON-EXEMPT WELL PERMIT APPLICATION, CITY OF PRESCOTT

To Whom It May Concern:

On behalf of the City of Prescott, Matrix New World Engineering (Matrix) is pleased to provide the following well spacing and impact analysis in support of the *Application for a Permit to Drill or Operate a Non-Exempt Well within an Active Management Area Pursuant to A.R.S. 45-599*. The purpose of the application is to increase the permitted maximum annual volume of pumping for the municipal drinking water supply well named Airport Well No. 5 (ADWR No. 55-229228). Airport Well No. 5 (AW-5) is located in the Prescott Active Management Area (PrAMA) in the SW ¼ of the SE ¼ of the SW ¼ of Section 18, Township 15 North, Range 1 West [B(15-01) 18CDC]. The well was completed in December 2018 by Drill Tech, Inc. (ADWR License No. 239) of Chino Valley, Arizona. An As-Built Diagram for AW-5 is provided on Figure 1.

The previous Application (received by ADWR on August 8, 2018) included a well impact study by Southwest Groundwater Consultants (SGC) to withdraw 806.5 acre-feet per annum (AFA). The impact radius was estimated based on a conservative estimate of aquifer transmissivity derived from various sources including the Prescott Active Management Area (PrAMA) Groundwater Flow Model (Nelson and Yunker, 2014) and previous impact studies by ADWR Hydrology Division. PrAMA model data consist of estimations of unit thickness, hydraulic conductivity, and storage coefficient for half mile grid cells in the model domain.

The impact of pumping groundwater at AW-5 for this Application is calculated from the results of aquifer testing of the completed well. The following analysis indicates that the desired annual withdrawal limit of 4,000 AFA (2,480 gpm) for AW-5 meets the maximum projected groundwater level drawdown criteria specified by ADWR Rule R12-15-1302.

Calculation Method

Impact from pumping AW-5 was estimated using THWELLS v 4.01 multi-Theis analysis software (van der Heijde, 1996. THWELLS calculates drawdown over a grid of specified data points. Using the unconfined aquifer option, the calculated drawdown at each well was corrected using the method described by Jacob (1946).

Groundwater Levels

Depth to groundwater at AW-5 is 393 ft bls; groundwater surface elevation is 4,519 feet above mean sea level (ft amsl). Based on contours of the groundwater surface, the regional groundwater flow direction is towards the north-northeast.

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Aquifer Characteristics

The aquifer in the study area is comprised of two units: an upper alluvial unit (UAU) and a lower volcanic unit (LVU). Depth to the LVU at AW-5 is determined by drilling to be 388 ft bls; bedrock was not encountered to total depth of the borehole at 896 ft bls. Based on static water level of 393 ft bls, the minimum saturated thickness of the LVU penetrated by AW-5 is 503 feet.

A 24-hour constant rate test was performed at AW-5 on February 4-5, 2019 at an average discharge rate of 1,970 gpm. The water level drawdown record for the constant rate test is provided in Table 1 and is plotted on Figure 2. A water level recovery test was conducted immediately following cessation of pumping. Recovery water level data is provided in Table 2 and plotted on Figure 3. Using the Theis Recovery Method (in Kruseman and DeRidder, 1990) the transmissivity of the LVU penetrated by AW-5 is calculated to be 668,250 gpd/ft. This result is consistent with values used for Layer 2 in the PrAMA model. The model specific yield of the LVU beneath AW-5 is 0.09.

Aquifer Boundaries

An image well boundary was used in the impact analysis to account for an area of low hydraulic conductivity in Layer 2 of the PrAMA model that generally corresponds to shallow bedrock near the margins of the basin. The hydrogeologic boundary is placed in a northwest-southeast trend approximately 13,000 feet southwest of AW-5.

Calculation Grid

The grid encompasses an area being approximately 12-miles long (N-S) by 7-miles wide (E-W) that is centered over AW-5. The nodal spacing is 328 feet (100 meters) in both the x and y directions. The grid values are in units of feet in the Universal Transverse Mercator (Zone 12, NAD 1927) coordinate system.

Well Impact

Based on the aquifer parameters and boundary conditions described above, after 5-years (1,825 days) continuously pumping AW-5 at the rate of 2,480 gpm (4,000 AFA) the 25-foot drawdown radius is less than 0.5-feet; the 10-foot drawdown radius is less than 1-feet. The nearest existing well potentially impacted by pumping at AW-5 is located approximately 600-feet north (55-594558). However, a field investigation by Matrix has determined this well to be collapsed (dry) above the water table at 375 ft bls. Based on the impact analysis presented no impact waivers are required to permit AW-5 for an annual volume of 4,000 acre-feet.

Please contact our office at (928) 771-0610 if you have any questions or require additional information.

Sincerely,
Matrix New World Engineering

Dylan Easthouse, R.G.
Senior Project Hydrogeologist

References

ADWR. 2019a. On-line Groundwater Site Inventory (GWSI) Database. Arizona Department of Water Resources. Queried March 2019.

ADWR. 2019b. On-line Imaged Well Records Database. Well driller reports. Arizona Department of Water Resources. Queried March 2019.

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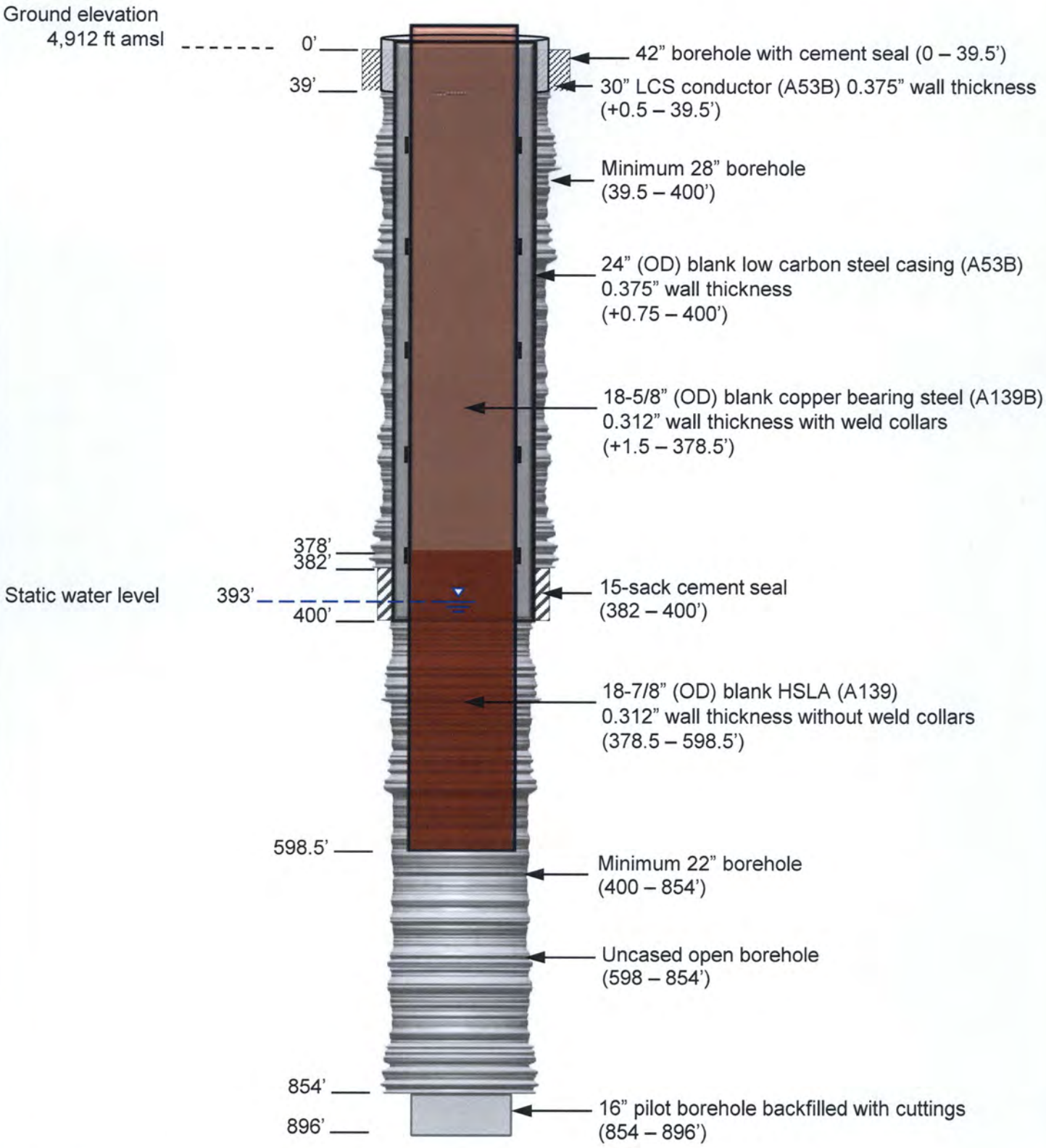
ATTACHMENTS

Figure 1 – As-Built Diagram, Well AW-5
Figure 2 – Constant Rate Test Drawdown Plot, Well AW-5
Figure 3 – Recovery Data Plot, Well AW-5

Table 1 – Constant Rate Water Level Drawdown Record, Well AW-5
Table 2 – Water Level Recovery Test Record, Well AW-5



NOT TO SCALE

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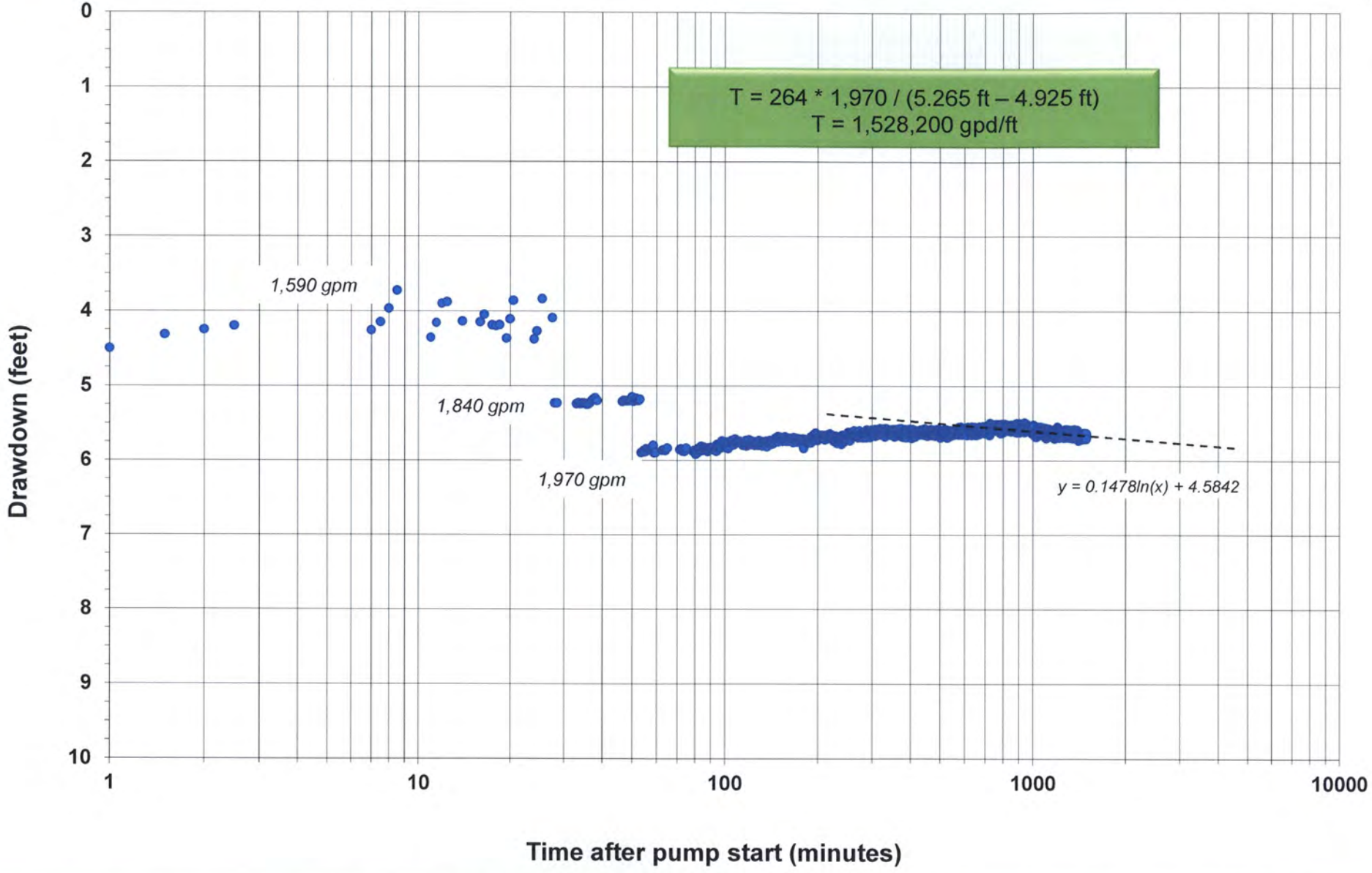
Southwest Groundwater

February 2019 Project 18-291

AS-BUILT WELL DIAGRAM
Airport Well No. 5 (55-229228)
[B(15-01) 18CDC]
City of Prescott, Yavapai County, Arizona

Figure 1



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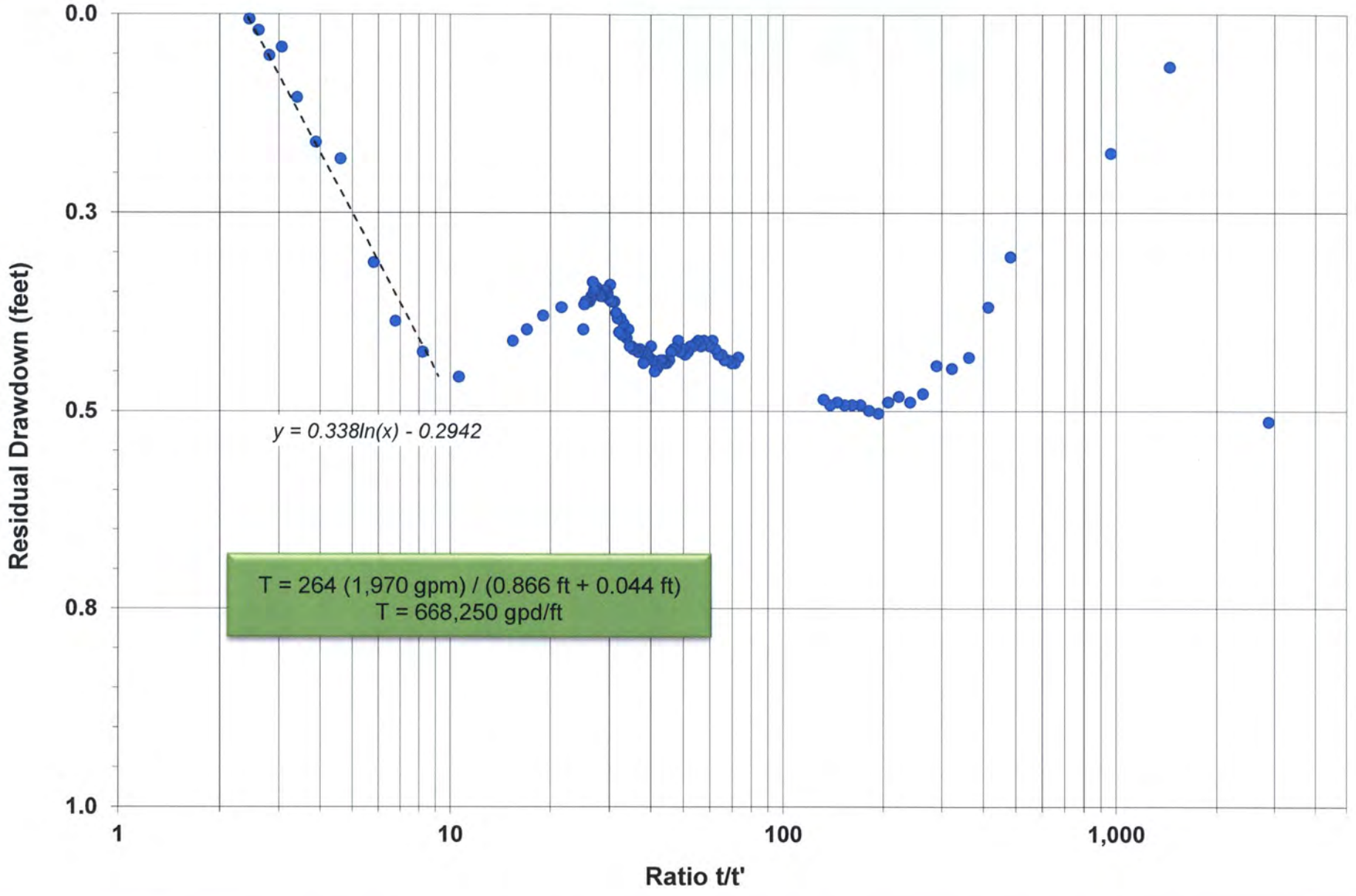
March 20, 2019 Project 18-291

STEP-RATE AND CONSTANT RATE TESTS, FEB. 4-5, 2019
DRAWDOWN VS. TIME
AIRPORT WELL NO. 5
City of Prescott, Yavapai County, Arizona

Figure 2



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Southwest Groundwater

March 20, 2019 Project 18-291

CONSTANT RATE RECOVERY, FEB. 5-6, 2019
RESIDUAL DRAWDOWN VS. T/T' RATIO
AIRPORT WELL NO. 5

City of Prescott, Yavapai County, Arizona

Figure 3

Water Level Drawdown Record

Constant Rate Test

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Southwest Groundwater

Date: 2/4-6/2019

Well Number: Airport Well No. 5
Job Number: 18-291
Job Title: City of Prescott
Reported By: D. Easthouse

Pump Agency:	Drill Tech	Static Water Level:	393.12 feet bls
Foreman:	Harold	Measure Point:	Top of sounder tube
Pump (bailer) make, size, intake depth:	500HP GE Submersible, 642'	Stick-up:	2 feet
Average Q:	1970 gpm	Line Correction:	0 feet

Clock Time	Time Since Pump Start	Water Level (ft bls)	Transducer Reading (ft head)	Draw Down (s)	Discharge Rate (Q)	Specific Capacity	Specific Draw Down	Remarks
	minutes	feet	feet bls	feet	gpm	gpm/ft	ft/gpm	
11:05	0	393.12	201.58	0				395.12
11:05:30	0.5							
11:06	1	397.62	198.44	4.50	1,595	354.30	0.00282	
11:06:30	1.5	397.44	198.57	4.32	1,595	369.61	0.00271	
11:07	2	397.37	198.61	4.25	1,595	375.31	0.00266	
11:07:30	2.5	397.32	198.65	4.20	1,595	379.82	0.00263	
11:10	5				1,595			399.00
11:12	7	397.38	198.61	4.26	1,595	374.42	0.00267	
11:12:30	7.5	397.27	198.68	4.15	1,597	384.98	0.00260	
11:13	8	397.09	198.81	3.97	1,597	402.41	0.00249	
11:13:30	8.5	396.85	198.98	3.73	1,595	428.25	0.00234	
11:16	11	397.48	198.54	4.36	1,594	365.98	0.00273	
11:16:30	11.5	397.28	198.68	4.16	1,596	383.69	0.00261	
11:17	12	397.02	198.86	3.90	1,593	408.30	0.00245	
11:17:30	12.5	397.00	198.87	3.88	1,596	411.19	0.00243	
11:19	14	397.26	198.69	4.14	1,597	385.83	0.00259	
11:20	15							399.00
11:21	16	397.27	198.68	4.15	1,595	384.33	0.00260	
11:21:30	16.5	397.17	198.75	4.05	1,594	393.67	0.00254	
11:22:30	17.5	397.31	198.66	4.19	1,593	380.31	0.00263	
11:23	18	397.32	198.65	4.20	1,591	378.75	0.00264	
11:23:30	18.5	397.30	198.66	4.18	1,591	380.35	0.00263	
11:24:30	19.5	397.49	198.53	4.37	1,597	365.90	0.00273	
11:25	20	397.23	198.71	4.11	1,595	388.22	0.00258	399.01
11:25:30	20.5	396.98	198.88	3.86	1,591	412.13	0.00243	
11:29	24	397.50	198.52	4.38	1,592	363.83	0.00275	
11:29:30	24.5	397.39	198.60	4.27	1,594	373.20	0.00268	
11:30:30	25.5	396.96	198.90	3.84	1,593	415.27	0.00241	
11:32:30	27.5	397.21	198.72	4.09	1,592	388.90	0.00257	End step 1
11:33	28	398.35	197.93	5.23	1,837	351.06	0.00285	
11:33:30	28.5	398.35	197.93	5.23	1,847	352.87	0.00283	
11:35	30							400.15
11:38	33	398.36	197.92	5.24	1,837	350.30	0.00285	
11:38:30	33.5	398.35	197.93	5.23	1,845	352.89	0.00283	
11:39	34	398.36	197.92	5.24	1,843	351.49	0.00284	

Clock Time	Time Since Pump Start	Water Level (ft bls)	Transducer Reading (ft head)	Draw Down (s)	Discharge Rate (Q)	Specific Capacity	Specific Draw Down	Remarks
	minutes	feet	feet bls	feet	gpm	gpm/ft	ft/gpm	
11:39:30	34.5	398.35	197.93	5.23	1,837	351.06	0.00285	
11:40	35	398.35	197.93	5.23	1,838	351.25	0.00285	
11:40:30	35.5	398.37	197.91	5.25	1,841	350.85	0.00285	
11:41	36	398.37	197.91	5.25	1,842	350.98	0.00285	
11:41:30	36.5	398.35	197.93	5.23	1,836	350.90	0.00285	
11:42	37	398.32	197.95	5.20	1,841	353.93	0.00283	
11:42:30	37.5	398.30	197.96	5.18	1,836	354.70	0.00282	
11:43	38	398.28	197.97	5.16	1,827	353.90	0.00283	
11:43:30	38.5	398.32	197.95	5.20	1,839	353.85	0.00283	
11:45	40	397.08	198.82		1,838			400.15
11:50	45	397.91	198.24		1,839			400.15
11:51:30	46.5	398.33	197.94	5.21	1,842	353.46	0.00283	
11:52	47	398.32	197.95	5.20	1,834	352.82	0.00283	
11:52:30	47.5	398.32	197.95	5.20	1,839	353.52	0.00283	
11:53	48	398.32	197.95	5.20	1,841	353.87	0.00283	
11:53:30	48.5	398.32	197.95	5.20	1,833	352.25	0.00284	
11:54	49	398.32	197.95	5.20	1,840	353.76	0.00283	
11:54:30	49.5	398.31	197.95	5.19	1,844	355.08	0.00282	
11:55	50	398.27	197.98	5.15	1,843	357.75	0.00280	
11:55:30	50.5	398.33	197.94	5.21	1,840	353.39	0.00283	
11:56	51	398.30	197.96	5.18	1,838	354.60	0.00282	
11:56:30	51.5	398.29	197.97	5.17	1,837	355.59	0.00281	
11:57	52	398.32	197.95	5.20	1,843	354.52	0.00282	
11:57:30	52.5	398.32	197.95	5.20	1,838	353.59	0.00283	
11:58	53	398.30	197.96	5.18	1,841	355.26	0.00281	End step 2
11:58:30	53.5	399.02	197.46	5.90	1,978	335.43	0.00298	
11:59	54	399.01	197.46	5.89	1,979	335.81	0.00298	
11:59:30	54.5	398.99	197.48	5.87	1,974	336.38	0.00297	
12:00	55	399.01	197.47	5.89	1,967	334.10	0.00299	400.82
12:00:30	55.5	398.97	197.50	5.85	1,975	337.67	0.00296	
12:01	56	398.99	197.48	5.87	1,975	336.29	0.00297	
12:01:30	56.5	398.97	197.50	5.85	1,974	337.55	0.00296	
12:02	57	398.97	197.49	5.85	1,970	336.61	0.00297	
12:02:30	57.5	398.96	197.50	5.84	1,966	336.52	0.00297	
12:03	58	398.94	197.51	5.82	1,975	339.16	0.00295	
12:03:30	58.5	398.92	197.53	5.80	1,971	339.75	0.00294	
12:04	59	399.02	197.46	5.90	1,969	333.52	0.00300	
12:04:30	59.5	399.02	197.46	5.90	1,980	335.68	0.00298	
12:05	60							400.82
12:07:30	62.5	398.99	197.48	5.87	1,976	336.77	0.00297	
12:08	63	398.98	197.48	5.86	1,972	336.38	0.00297	
12:08:30	63.5	398.99	197.48	5.87	1,972	335.98	0.00298	
12:09	64	398.99	197.48	5.87	1,982	337.53	0.00296	
12:09:30	64.5	398.97	197.50	5.85	1,974	337.63	0.00296	
12:10	65	398.96	197.50	5.84	1,972	337.85	0.00296	
12:16:30	71.5	398.98	197.49	5.86	1,967	335.71	0.00298	
12:17	72	398.97	197.50	5.85	1,971	337.01	0.00297	
12:17:30	72.5	398.97	197.49	5.85	1,974	337.22	0.00297	
12:18	73	399.00	197.47	5.88	1,974	335.85	0.00298	

Clock Time	Time Since Pump Start	Water Level (ft bls)	Transducer Reading (ft head)	Draw Down (s)	Discharge Rate (Q)	Specific Capacity	Specific Draw Down	Remarks
	minutes	feet	feet bls	feet	gpm	gpm/ft	ft/gpm	
12:18:30	73.5	398.99	197.48	5.87	1,974	336.32	0.00297	
12:19	74	399.00	197.47	5.88	1,976	335.81	0.00298	
12:19:30	74.5	398.99	197.48	5.87	1,978	336.84	0.00297	
12:20	75	398.96	197.50	5.84	1,979	338.96	0.00295	400.85
12:24	79	399.00	197.47	5.88	1,972	335.25	0.00298	
12:24:30	79.5	398.99	197.48	5.87	1,975	336.58	0.00297	
12:25	80	398.99	197.48	5.87	1,972	336.13	0.00298	
12:25:30	80.5	399.04	197.44	5.92	1,969	332.38	0.00301	
12:26	81	398.98	197.48	5.86	1,973	336.50	0.00297	
12:26:30	81.5	399.02	197.46	5.90	1,974	334.36	0.00299	
12:27	82	398.98	197.48	5.86	1,974	336.75	0.00297	
12:27:30	82.5	398.96	197.50	5.84	1,975	338.27	0.00296	
12:28	83	398.96	197.50	5.84	1,967	336.89	0.00297	
12:28:30	83.5	398.95	197.51	5.83	1,969	337.50	0.00296	
12:29	84	398.93	197.52	5.81	1,974	339.62	0.00294	
12:29:30	84.5	398.99	197.48	5.87	1,974	336.10	0.00298	
12:30	85	398.99	197.48	5.87	1,978	337.15	0.00297	
12:30:30	85.5	398.94	197.51	5.82	1,973	338.83	0.00295	
12:31	86	398.96	197.50	5.84	1,978	338.50	0.00295	
12:31:30	86.5	398.97	197.49	5.85	1,972	336.92	0.00297	
12:32	87	398.97	197.50	5.85	1,979	338.36	0.00296	
12:32:30	87.5	398.96	197.50	5.84	1,970	337.38	0.00296	
12:33	88	399.00	197.47	5.88	1,969	334.71	0.00299	
12:33:30	88.5	398.98	197.48	5.86	1,971	336.22	0.00297	
12:34	89	398.95	197.51	5.83	1,970	337.78	0.00296	
12:34:30	89.5	398.98	197.48	5.86	1,975	336.85	0.00297	
12:35	90	398.95	197.51	5.83	1,971	337.92	0.00296	
12:35:30	90.5	398.95	197.51	5.83	1,975	338.96	0.00295	
12:36	91	398.97	197.49	5.85	1,973	337.14	0.00297	
12:36:30	91.5	398.95	197.51	5.83	1,971	337.92	0.00296	
12:37	92	398.98	197.49	5.86	1,973	336.72	0.00297	
12:37:30	92.5	398.98	197.48	5.86	1,972	336.28	0.00297	
12:38	93	398.96	197.50	5.84	1,974	338.23	0.00296	
12:38:30	93.5	398.97	197.49	5.85	1,977	337.77	0.00296	
12:39	94	399.00	197.47	5.88	1,975	335.93	0.00298	
12:39:30	94.5	398.91	197.54	5.79	1,974	341.06	0.00293	
12:40	95	398.96	197.50	5.84	1,970	337.15	0.00297	400.85
12:40:30	95.5	398.94	197.52	5.82	1,975	339.45	0.00295	
12:41	96	398.91	197.53	5.79	1,969	339.92	0.00294	
12:41:30	96.5	398.96	197.50	5.84	1,972	337.85	0.00296	
12:42	97	398.91	197.53	5.79	1,971	340.33	0.00294	
12:42:30	97.5	398.95	197.51	5.83	1,971	338.14	0.00296	
12:43	98	398.86	197.57	5.74	1,978	344.55	0.00290	
12:43:30	98.5	398.91	197.53	5.79	1,972	340.37	0.00294	
12:44	99	398.88	197.56	5.76	1,969	341.73	0.00293	
12:44:30	99.5	398.92	197.53	5.80	1,974	340.43	0.00294	
12:45	100	398.95	197.51	5.83	1,978	339.34	0.00295	
14:25	200	398.78	197.63	5.66	1,970	348.35	0.00287	
16:05	300	398.75	197.65	5.63	1,970	349.89	0.00286	

Clock Time	Time Since Pump Start	Water Level (ft bls)	Transducer Reading (ft head)	Draw Down (s)	Discharge Rate (Q)	Specific Capacity	Specific Draw Down	Remarks
	minutes	feet	feet bls	feet	gpm	gpm/ft	ft/gpm	
17:45	400	398.77	197.64	5.65	1,973	349.52	0.00286	
19:25	500	398.77	197.63	5.65	1,974	349.32	0.00286	
19:30	505	398.78	197.63	5.66	1,974	348.97	0.00287	400.91
21:05	600	398.72	197.67	5.60	1,974	352.71	0.00284	
22:45	700	398.73	197.66	5.61	1,973	351.92	0.00284	
0:25:00	800	398.74	197.65	5.62	1,969	350.38	0.00285	
2:05:00	900	398.66	197.71	5.54	1,968	355.25	0.00281	
3:45:00	1000	398.70	197.69	5.58	1,971	353.55	0.00283	
5:25:00	1100	398.73	197.66	5.61	1,970	351.18	0.00285	
7:05:00	1200	398.77	197.64	5.65	1,969	348.76	0.00287	
8:45:00	1300	398.75	197.65	5.63	1,970	349.89	0.00286	
10:25:00	1400	398.83	197.59	5.71	1,967	344.60	0.00290	
11:05:00	1440	398.80	197.62	5.68	1,971	347.29	0.00288	
11:55	1490.5	398.76	197.64	5.64	1,972	349.51	0.00286	401.03
11:58	1493.5							Pump off
END CONSTANT RATE TEST								

Water Level Recovery Record

Constant-rate Discharge Test

MATRIXNEWORLD
Southwest Groundwater

Date: 2/5-6/19

Well Number: Airport Well No. 5 **Job Title:** City of Prescott

Job Number: 18-291 **Reported By:** D. Easthouse

Pump Agency:	Drill Tech, Inc.	Static Water Level:	393.12 feet bls
Foreman:	Harold	Measure Point:	Top of sounding tube
Pump (bailer) make, size, intake depth:	500Hp submersible at 642'	Stick-up:	2 feet
Average Q:	1,970	Transducer Depth	595.37 feet

Clock Time	Time Since Pump Start (t)	Time Since Pump Stop (t')	Ratio t/t'	Transducer Reading	Recovery Water Level	Residual Draw Down (s')	Remarks
	minutes	minutes		feet	feet bls	feet	
12:00	1441	0		197.60	398.82	5.70	
12:00:30	1441.5	0.5	2883.0	201.92	393.63	0.51	
12:01	1442	1	1442.0	202.18	393.19	0.07	394.25
12:01:30	1442.5	1.5	961.7	202.07	393.30	0.18	394.9
12:02:00	1443	2	721.5	202.25	393.12	0.00	394.87
12:02	1443.5	2.5	577.4	202.27	393.10	-0.02	
12:03:00	1444	3	481.3	201.94	393.43	0.31	395
12:03:30	1444.5	3.5	412.7	201.88	393.49	0.37	395.2
12:04	1445	4	361.2	201.82	393.55	0.43	395.25
12:04:30	1445.5	4.5	321.2	201.80	393.57	0.45	
12:05:00	1446	5	289.2	201.81	393.56	0.44	
12:05	1446.5	5.5	263.0	201.77	393.60	0.48	
12:06:00	1447	6	241.2	201.76	393.61	0.49	
12:06:30	1447.5	6.5	222.7	201.77	393.60	0.48	
12:07	1448	7	206.9	201.76	393.61	0.49	
12:07:30	1448.5	7.5	193.1	201.75	393.62	0.50	
12:08:00	1449	8	181.1	201.75	393.62	0.50	
12:08	1449.5	8.5	170.5	201.76	393.61	0.49	
12:09:00	1450	9	161.1	201.76	393.61	0.49	
12:09:30	1450.5	9.5	152.7	201.76	393.61	0.49	
12:10	1451	10	145.1	201.76	393.61	0.49	
12:10:30	1451.5	10.5	138.2	201.76	393.61	0.49	
12:11:00	1452	11	132.0	201.76	393.61	0.49	
12:20	1461	20	73.0	201.82	393.55	0.43	92% recovery
12:20:30	1461.5	20.5	71.3	201.81	393.56	0.44	
12:21:00	1462	21	69.6	201.81	393.56	0.44	
12:21	1462.5	21.5	68.0	201.81	393.56	0.44	
12:22:00	1463	22	66.5	201.81	393.56	0.44	
12:22:30	1463.5	22.5	65.0	201.82	393.55	0.43	
12:23	1464	23	63.7	201.82	393.55	0.43	
12:23:30	1464.5	23.5	62.3	201.83	393.54	0.42	
12:24:00	1465	24	61.0	201.84	393.53	0.41	
12:24	1465.5	24.5	59.8	201.83	393.54	0.42	

Clock Time	Time Since Pump Start (t)	Time Since Pump Stop (t')	Ratio t/t'	Transducer Reading	Recovery Water Level	Residual Draw Down (s')	Remarks
	minutes	minutes		feet	feet bls	feet	
12:25:00	1466	25	58.6	201.84	393.53	0.41	
12:25:30	1466.5	25.5	57.5	201.84	393.53	0.41	
12:26	1467	26	56.4	201.83	393.54	0.42	
12:26:30	1467.5	26.5	55.4	201.84	393.53	0.41	
12:27:00	1468	27	54.4	201.84	393.53	0.41	
12:27	1468.5	27.5	53.4	201.83	393.54	0.42	
12:28:00	1469	28	52.5	201.83	393.54	0.42	
12:28:30	1469.5	28.5	51.6	201.82	393.55	0.43	395.3
12:29	1470	29	50.7	201.82	393.55	0.43	
12:29:30	1470.5	29.5	49.8	201.83	393.54	0.42	
12:30:00	1471	30	49.0	201.82	393.55	0.43	
12:30	1471.5	30.5	48.2	201.84	393.53	0.41	
12:31:00	1472	31	47.5	201.83	393.54	0.42	
12:31:30	1472.5	31.5	46.7	201.83	393.54	0.42	
12:32	1473	32	46.0	201.82	393.55	0.43	
12:32:30	1473.5	32.5	45.3	201.81	393.56	0.44	
12:33:00	1474	33	44.7	201.81	393.56	0.44	
12:33	1474.5	33.5	44.0	201.81	393.56	0.44	
12:34:00	1475	34	43.4	201.81	393.56	0.44	
12:34:30	1475.5	34.5	42.8	201.81	393.56	0.44	
12:35	1476	35	42.2	201.81	393.56	0.44	
12:35:30	1476.5	35.5	41.6	201.80	393.57	0.45	
12:36:00	1477	36	41.0	201.80	393.57	0.45	
12:36	1477.5	36.5	40.5	201.81	393.56	0.44	
12:37:00	1478	37	39.9	201.83	393.54	0.42	
12:37:30	1478.5	37.5	39.4	201.82	393.55	0.43	
12:38	1479	38	38.9	201.82	393.55	0.43	
12:38:30	1479.5	38.5	38.4	201.82	393.55	0.43	
12:39:00	1480	39	37.9	201.81	393.56	0.44	
12:39	1480.5	39.5	37.5	201.82	393.55	0.43	
12:40:00	1481	40	37.0	201.83	393.54	0.42	
12:40:30	1481.5	40.5	36.6	201.82	393.55	0.43	
12:41	1482	41	36.1	201.83	393.54	0.42	
12:41:30	1482.5	41.5	35.7	201.83	393.54	0.42	
12:42:00	1483	42	35.3	201.83	393.54	0.42	
12:42	1483.5	42.5	34.9	201.83	393.54	0.42	
12:43:00	1484	43	34.5	201.83	393.54	0.42	
12:43:30	1484.5	43.5	34.1	201.85	393.52	0.40	
12:44	1485	44	33.7	201.84	393.53	0.41	
12:44:30	1485.5	44.5	33.4	201.85	393.52	0.40	
12:45:00	1486	45	33.0	201.86	393.51	0.39	
12:45	1486.5	45.5	32.7	201.85	393.52	0.40	
12:46:00	1487	46	32.3	201.87	393.50	0.38	
12:46:30	1487.5	46.5	32.0	201.85	393.52	0.40	
12:47	1488	47	31.7	201.87	393.50	0.38	
12:47:30	1488.5	47.5	31.3	201.87	393.50	0.38	
12:48:00	1489	48	31.0	201.89	393.48	0.36	
12:48	1489.5	48.5	30.7	201.89	393.48	0.36	
12:49:00	1490	49	30.4	201.89	393.48	0.36	
12:49:30	1490.5	49.5	30.1	201.91	393.46	0.34	

Clock Time	Time Since Pump Start (t)	Time Since Pump Stop (t')	Ratio t/t'	Transducer Reading	Recovery Water Level	Residual Draw Down (s')	Remarks
	minutes	minutes		feet	feet bls	feet	
12:50	1491	50	29.8	201.89	393.48	0.36	
12:50:30	1491.5	50.5	29.5	201.90	393.47	0.35	
12:51:00	1492	51	29.3	201.90	393.47	0.35	
12:51	1492.5	51.5	29.0	201.90	393.47	0.35	
12:52:00	1493	52	28.7	201.89	393.48	0.36	
12:52:30	1493.5	52.5	28.4	201.89	393.48	0.36	
12:53	1494	53	28.2	201.89	393.48	0.36	
12:53:30	1494.5	53.5	27.9	201.90	393.47	0.35	
12:54:00	1495	54	27.7	201.90	393.47	0.35	
12:54	1495.5	54.5	27.4	201.91	393.46	0.34	
12:55:00	1496	55	27.2	201.90	393.47	0.35	
12:55:30	1496.5	55.5	27.0	201.90	393.47	0.35	
12:56	1497	56	26.7	201.91	393.46	0.34	
12:56:30	1497.5	56.5	26.5	201.89	393.48	0.36	
12:57:00	1498	57	26.3	201.89	393.48	0.36	
12:57	1498.5	57.5	26.1	201.89	393.48	0.36	
12:58:00	1499	58	25.8	201.89	393.48	0.36	
12:58:30	1499.5	58.5	25.6	201.89	393.48	0.36	
12:59	1500	59	25.4	201.89	393.48	0.36	
12:59:30	1500.5	59.5	25.2	201.88	393.49	0.37	
13:00:00	1501	60	25.0	201.85	393.52	0.40	
13:10	1511	70	21.6	201.88	393.49	0.37	
13:20:00	1521	80	19.0	201.87	393.50	0.38	
13:30:00	1531	90	17.0	201.85	393.52	0.40	
13:40	1541	100	15.4	201.84	393.53	0.41	
14:30:00	1591	150	10.6	201.79	393.58	0.46	
15:20:00	1641	200	8.2	201.82	393.55	0.43	
16:10	1691	250	6.8	201.86	393.51	0.39	
17:00:00	1741	300	5.8	201.94	393.43	0.31	95% recovery
18:40:00	1841	400	4.6	202.07	393.30	0.18	
20:20	1941	500	3.9	202.09	393.28	0.16	
22:00:00	2041	600	3.4	202.15	393.22	0.10	
23:40:00	2141	700	3.1	202.21	393.16	0.04	
1:20	2241	800	2.8	202.20	393.17	0.05	
3:00:00	2341	900	2.6	202.23	393.14	0.02	
4:40:00	2441	1000	2.4	202.24	393.13	0.01	100%
6:20	2541	1100	2.3	202.26	393.11	-0.01	
8:00:00	2641	1200	2.2	202.34	393.03	-0.09	
9:40:00	2741	1300	2.1	202.27	393.10	-0.02	
11:20	2841	1400	2.0	202.27	393.10	-0.02	
12:00:00	2881	1440	2.0	202.25	393.12	0.00	
END RECOVERY TEST							

Southwest Groundwater
A DIVISION OF MATRIX NEW WORLD

March 28, 2017

Mr. Mike Young, President
Fann Environmental, LLC
6708 Corsair Ave., Suite A
Prescott, Arizona 86301

SUBJECT: PUMP TESTING RESULTS
CITY OF PRESCOTT WELL NO. 5

Dear Mr. Young:

Southwest Groundwater Consultants (SGC) is pleased to provide the following summary report for the pump testing conducted at City of Prescott Well No. 5. This work was completed under Task 2 of the scope of work dated November 29, 2016.

The pump testing scope of work was modified based on the revisions requested by the City of Prescott during the March 10, 2017 kick-off meeting. Specifically, a 100-minute constant rate pumping test and recovery test were conducted instead of the proposed 16-hour step-rate test. The objective of the short term pumping test was to establish a baseline of well performance prior to the planned removal and replacement of the existing pump equipment.

The Arizona Department of Water Resources (ADWR) Registration number for Well No. 5 is 55-606021. ADWR utilizes this well as a data collection point for the Groundwater Site Inventory (GWSI) Database. Historic water level data from ADWR shows that static water levels measured in the well have declined a total of 100 feet for the period from 1949 to present. In the ten year period from 2007 to -2017 the average annual decline was 0.8 ft/year.

The pump testing was conducted at Well No. 5 in Chino Valley, Arizona on March 14, 2017. Mr. Randy Baldauf, City of Prescott Water Production Operator, provided access to the well, and operated the pump.

Prior to the test, the well pump was turned off during the early morning on March 13, 2017 to allow the water level to recover from the pumping drawdown. Consistent with previous arrangements, ADWR personnel collected the annual static water level measurement for the GWSI database prior to the start of the pump test.

SGC measured the static water level, prior to the start of the test, at 191.5 feet below the top of the sounder tube. The sounder tube is approximately one-foot above the top of the concrete floor of the pump house building. Subtracting the approximate one-foot elevation difference yields a static water level of 190.5 feet below land surface (bls).

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Phoenix, Arizona
Prescott, Arizona
Cottonwood, Arizona

The US Motors 300-HP line shaft turbine motor which energizes the well pump was manually switched on at 11:27 am on March 14, 2017. A few minutes later the pump engaged and the well discharge was momentarily directed to a retention basin located north of the pump house. After approximately two minutes the waste valve closed, automatically, and the discharge was directed into the water collection piping for the well field system.

Flow rates for the well discharge were measured utilizing the existing Siemens SITRANS F M Magflo 6000 meter that is installed at the well head. During the period that the discharge was directed to the retention basin, the discharge rate was recorded at approximately 2,400 gallons per minute (gpm). The discharge rate declined to approximately 2,225 gpm when the discharge was directed to the water collection piping. After 100-minutes of pumping, the discharge rate had declined to approximately 2,203 gpm. The average discharge rate for the test was approximately 2,210 gpm. Pumping ended after a period of 105 minutes.

SGC measured water levels during the test using a Solinst Water Level Meter. During the initial period of discharge at 2,400 gpm, the water level declined to 211.5 feet bls yielding a drawdown of 21 feet. When the waste valve closed, and the discharge rate reduced to 2,225 gpm, the water level rose 2.4 feet to a depth of 209.10 feet bls, which corresponds to a drawdown of 18.6 feet. Total drawdown measured at the end of the test was 20.18 feet. Well No. 5 test data are shown in the attached Water Level Drawdown Record; the results are summarized in Table 1.

Table 1 – Summary of March 14, 2017 Pumping Data, Well No. 5

Parameter	Value
Static Water Level (SGC)	190.5 ft bls
Depth of Pump Intake	~285 ft bls
Duration of Testing	105 min.
Average Pumping Rate	2,210 gpm
Final Pumping Water Level	~210.7 ft bls
Final Drawdown	~20.2 ft
Final Specific Capacity	109 gpm/ft

A water level recovery test was conducted immediately upon conclusion of the constant-rate test. The water level rose 17.83 feet to a depth of 192.85 ft bls at 1.5 minutes after the pump was turned off. Dividing the water level rise by the maximum drawdown yields 88 % recovery at 1.5 minutes after pumping ended. After a period of 30 minutes had elapsed since pumping ended, the water level was 97% recovered and the recovery test was terminated. The recovery data are tabulated in the attached Water Level Recovery Record.

The data from the constant rate test and the recovery test are plotted in the attached figures. The drawdown versus time data are plotted in Figure 1 and the specific drawdown versus time data are plotted in Figure 2. The Cooper-Jacob Straight-line Method was used to calculate the

transmissivity from the specific drawdown data. The calculated transmissivity is 464,575 gallons per day per foot (gpd/foot).

The recovery data are plotted in Figure 3. The residual drawdown is plotted versus the ratio of t to t', which is the ratio of time since pumping began to time since pumping ended. The Theis Recovery Method, as described in Kruseman and DeRidder, was used to calculate the transmissivity from the recovery data. The calculated transmissivity is 410,270 gpd/ft. Typically, the recovery data are more representative of aquifer conditions because fluctuations in pumping rates are averaged over the entire test period, and well inefficiencies are minimized.

The 100-minute constant rate pumping test and recovery test provide baseline data for Well No. 5. SGC recommends that similar testing be conducted after the well rehabilitation and other site improvements are complete. A more complete determination of aquifer properties and well performance at Well No. 5 would require the installation of larger capacity pumping equipment and an extended period of testing. SGC understands that the City of Prescott does not desire to install additional test pumping equipment at this time. SGC recommends that City staff include routine monitoring of pumping water level in future well operation records.

Please call if you have any questions or require additional information.

Sincerely,
Southwest Groundwater Consultants

Dylan J. Easthouse, R.G.
Senior Project Hydrogeologist

Attachments: Water Level Drawdown Record
Water Level Recovery Record
Figure 1 – Drawdown vs. Time
Figure 2 – Specific Drawdown vs. Time
Figure 3 – Residual Drawdown vs. t/t' Ratio

Southwest Groundwater
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Water Level Drawdown Record

Constant-rate Discharge Test

Date: 3/14/2017

Well Number: 55-606021 **Job Title:** City of Prescott Well No. 5

Job Number: B.2375 **Reported By:** D. Easthouse

Pump Agency:	City of Prescott	Static Water Level:	190.50 feet bls
Foreman:	Randy Baldauf	Measure Point:	Top of sounding tube
Pump (bailer) make, size, intake depth:	Intake at ~285'	Stick-up:	1 feet
Average Q:	2,210	Line Correction:	0 feet

Clock Time	Time Since Pump Start	Sounder Reading	Pumping Water Level	Draw Down (s)	Discharge Rate (Q)	Specific Capacity	Specific Draw Down	Remarks
	minutes	feet	feet bls	feet	gpm	gpm/ft	ft/gpm	
11:31:30	0	191.50	190.50	0	0			**Pump on**
11:32:00	0.5	211.45	210.45	19.95	2,400	120.301	0.00831	Pump to waste
11:32:30	1	212.60	211.60	21.10	2,400	113.744	0.00879	
11:33:00	1.5	212.50	211.50	21.00	2,400	114.286	0.00875	
11:34:30	3	210.10	209.10	18.60	2,225	119.624	0.00836	Pump to system
11:35	3.5	210.15	209.15	18.65	2,225	119.303	0.00838	
11:36	4.5	210.22	209.22	18.72	2,225	118.857	0.00841	
11:37	5.5	210.27	209.27	18.77	2,225	118.540	0.00844	62 PSI - Well
11:38	6.5	210.40	209.40	18.90	2,225	117.725	0.00849	52 PSI - System
11:39	7.5	210.50	209.50	19.00	2,225	117.105	0.00854	
11:40	8.5	210.55	209.55	19.05	2,225	116.798	0.00856	
11:41	9.5	210.62	209.62	19.12	2,225	116.370	0.00859	
11:42	10.5	210.69	209.69	19.19	2,226	115.998	0.00862	
11:47	15.5	210.98	209.98	19.48	2,230	114.476	0.00874	292 AMP
11:52	20.5	211.05	210.05	19.55	2,225	113.811	0.00879	
12:02	30.5	211.18	210.18	19.68	2,214	112.500	0.00889	
12:12	40.5	211.31	210.31	19.81	2,212	111.661	0.00896	
12:22	50.5	211.44	210.44	19.94	2,210	110.832	0.00902	
12:32	60.5	211.48	210.48	19.98	2,209	110.561	0.00904	
12:42	70.5	211.54	210.54	20.04	2,206	110.080	0.00908	
12:52	80.5	211.55	210.55	20.05	2,205	109.975	0.00909	
13:02	90.5	211.61	210.61	20.11	2,203	109.547	0.00913	
13:12	100.5	211.66	210.66	20.16	2,204	109.325	0.00915	
13:17	105.5	211.68	210.68	20.18	2,203	109.167	0.00916	**Pump off**
END OF CONSTANT-RATE DISCHARGE TEST								

Southwest Groundwater
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Water Level Recovery Record

Constant-rate Discharge Test

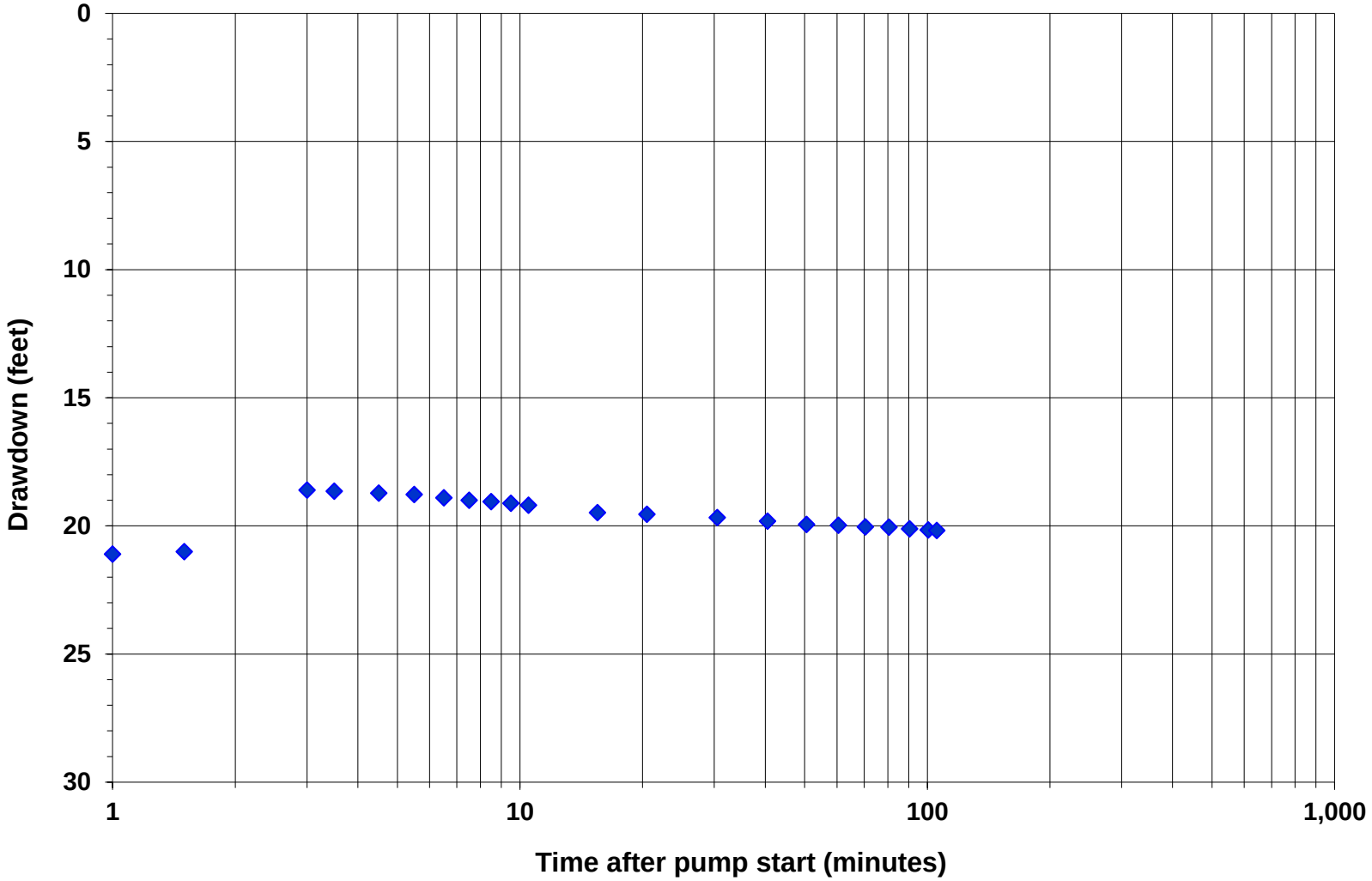
Date: 3/14/2017

Well Number: 55-606021 **Job Title:** City of Prescott Well No. 5

Job Number: B.2375 **Reported By:** D. Easthouse

Pump Agency:	City of Prescott	Static Water Level:	190.50 feet bls
Foreman:	Randy Baldauf	Measure Point:	Top of sounding tube
Pump (bailer) make, size, intake depth:	Intake at 285'	Stick-up:	1 feet
Average Q:	2,210	Line Correction:	0 feet

Clock Time	Time Since Pump Start (t)	Time Since Pump Stop (t')	Ratio t/t'	Sounder Reading	Recovery Water Level	Residual Draw Down (s')	Remarks
	minutes	minutes		feet	feet bls	feet	
13:17	105.5	0		211.68	210.68	20.18	**Pump off**
13:17:30	106	0.5	212.0	190.80	189.80	-0.70	
13:18:00	106.5	1	106.5	193.70	192.70	2.20	
13:18:30	107	1.5	71.3	193.85	192.85	2.35	
13:19	107.5	2	53.8	193.65	192.65	2.15	
13:20	108.5	3	36.2	193.42	192.42	1.92	
13:21	109.5	4	27.4	193.32	192.32	1.82	
13:22	110.5	5	22.1	193.15	192.15	1.65	
13:23	111.5	6	18.6	193.06	192.06	1.56	
13:24	112.5	7	16.1	192.91	191.91	1.41	
13:25	113.5	8	14.2	192.85	191.85	1.35	
13:26	114.5	9	12.7	192.80	191.80	1.30	
13:27	115.5	10	11.6	192.75	191.75	1.25	
13:37	125.5	20	6.3	192.35	191.35	0.85	
13:47	135.5	30	4.5	192.12	191.12	0.62	
13:57	145.5	40	3.6	192.03	191.03	0.53	
END OF RECOVERY READINGS							



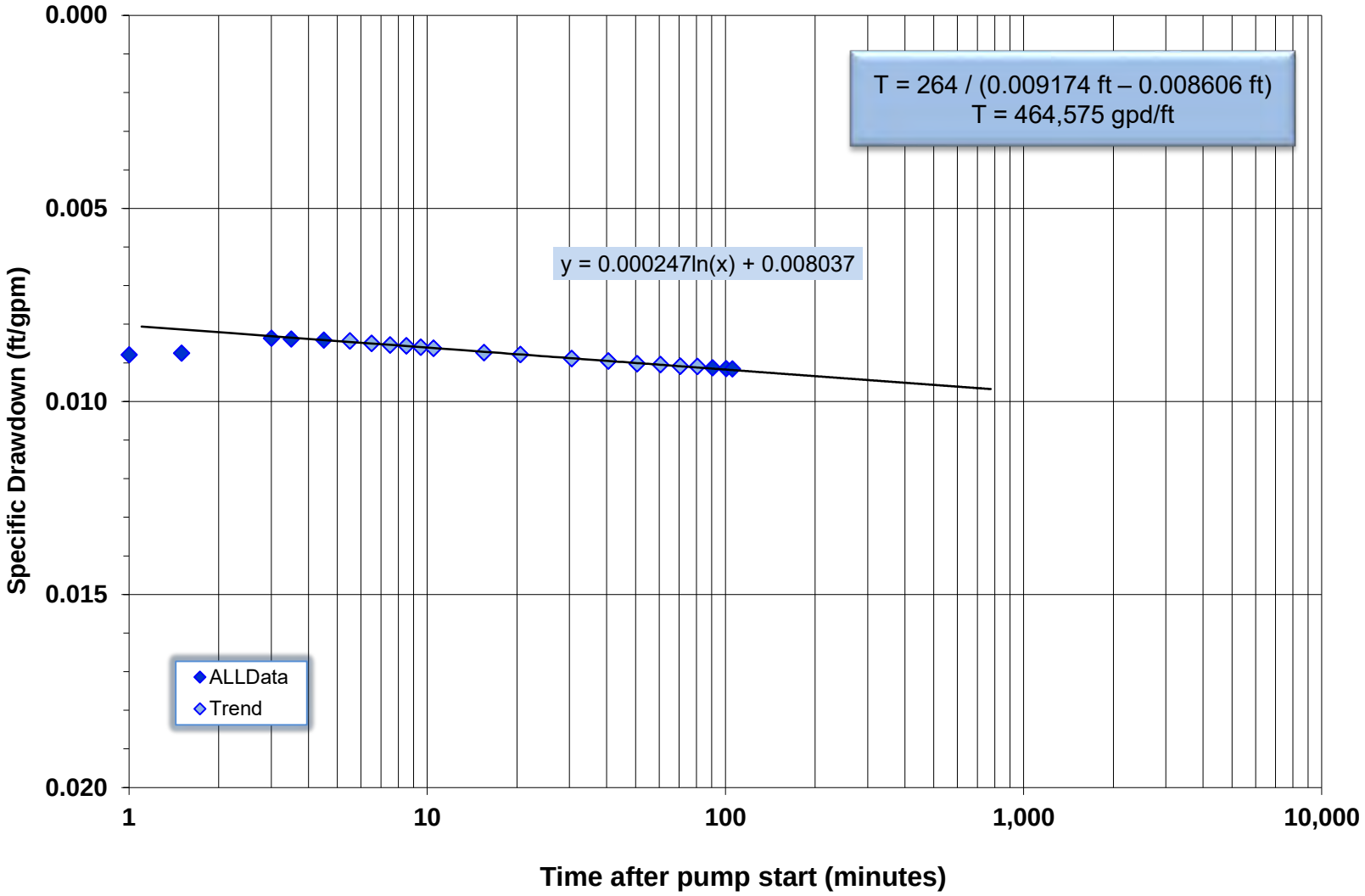
Southwest Groundwater

March 28, 2017 Project B.2319

DRAWDOWN VS. TIME
CONSTANT RATE TEST – WELL NO. 5

City of Prescott, Arizona

Figure 1



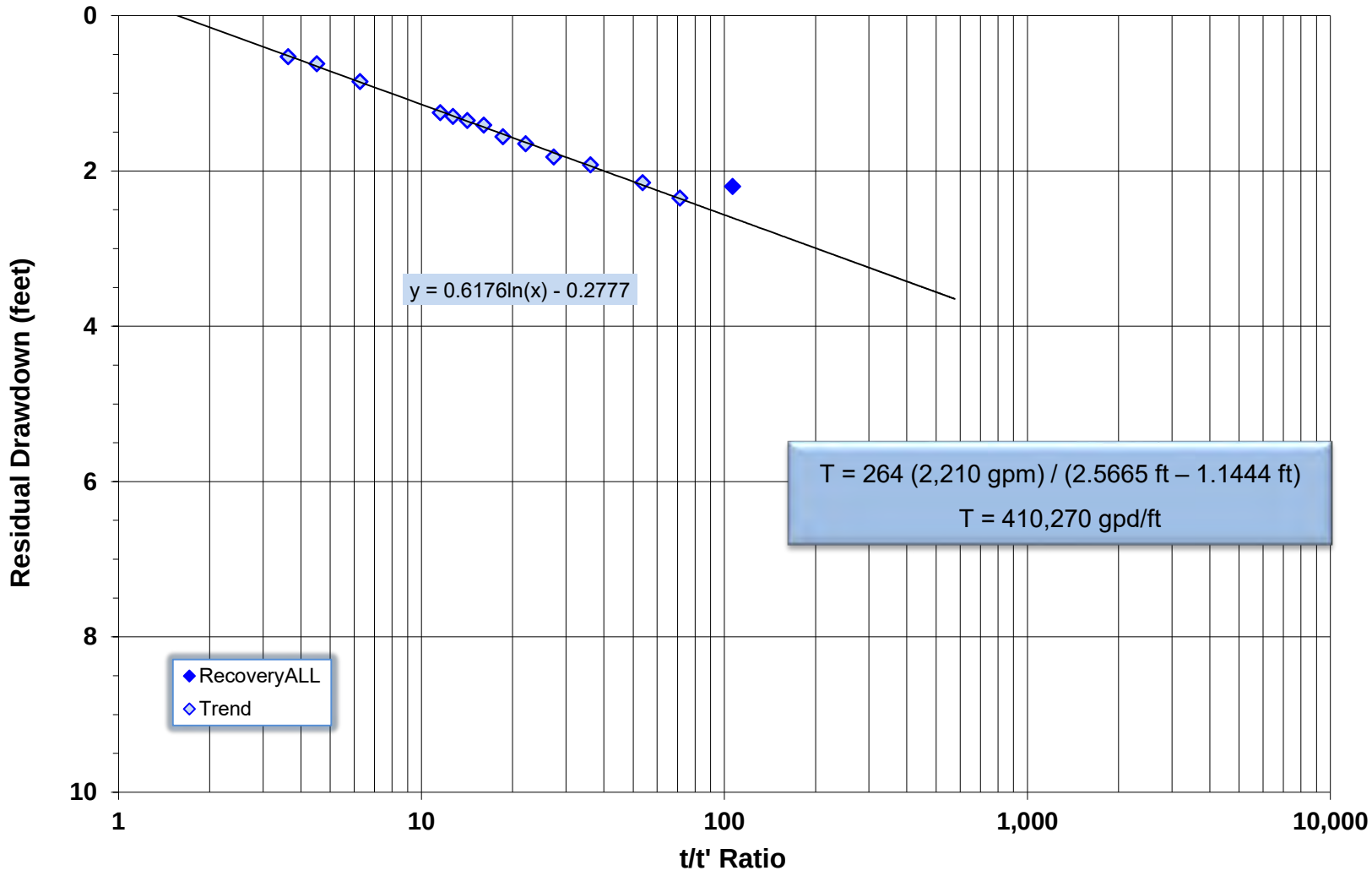
Southwest Groundwater

March 28, 2017 Project B.2319

SPECIFIC DRAWDOWN VS. TIME
CONSTANT RATE TEST – WELL NO. 5

City of Prescott, Arizona

Figure 2



Southwest Groundwater

RESIDUAL DRAWDOWN VS. T/T' RATIO
RECOVERY TEST – WELL NO. 5

City of Prescott, Arizona

March 28, 2017 Project B.2319

Figure 3

RECEIVED

MAY 18 2020

ADWR

Arizona Department of Water Resources
Groundwater Permitting and Wells Section
P.O. Box 36020, Phoenix, AZ 85067-6020
(602) 771-8527 • Fax (602) 771-8689
www.azwater.gov

Pump Installation Completion Report

- Review instructions prior to completing form in black or blue ink.
- The registered well owner should file this report with the Department within 30 days following installation of pump equipment.

FILE NUMBER

WELL REGISTRATION NUMBER
55 - 219158

** PLEASE PRINT CLEARLY **

SECTION 1. REGISTRY INFORMATION

Well Owner

FULL NAME OF COMPANY, ORGANIZATION, OR INDIVIDUAL
City of Prescott

MAILING ADDRESS
433 N. Virginia Street

CITY / STATE / ZIP CODE
Prescott/AZ/86301

CONTACT PERSON NAME AND TITLE
Leslie Graser, Water Res. Proj. Mgr

TELEPHONE NUMBER
928-777-1144

FAX
NA

Location of Well

WELL LOCATION ADDRESS (IF ANY)
4000 Ruger Road

TOWNSHIP (N/S)	RANGE (E/W)	SECTION	160 ACRE	40 ACRE	10 ACRE
15N	2W	24	SW ¼	SE ¼	NE ¼

COUNTY ASSESSOR'S PARCEL ID NUMBER (MOST RECENT)

BOOK	MAP	PARCEL
102	02	004A

COUNTY WHERE WELL IS LOCATED
Yavapai

SECTION 2. EQUIPMENT INSTALLED

DATE PUMP INSTALLED
3/17/2020

Pump Type

CHECK ONE

- ☐ Air Lift
- ☐ Bucket
- ☐ Centrifugal
- ☐ Jet
- ☐ Piston
- ☐ Rotary
- ☐ Submersible
- ☒ Turbine
- ☐ Other (*please specify*):

RATED PUMP CAPACITY
640 Gallons Per Minute

Pitless Adaptor

CHECK ONE *(SEE INSTRUCTIONS FOR DEFINITION)*

Was a pitless adaptor installed? ☐ Yes ☒ No

IF YES, DEPTH BELOW GROUND LEVEL THE DEVICE WAS INSTALLED
Feet

Power Type

CHECK ONE

- ☐ Diesel Engine
- ☒ Electric Motor
- ☐ Gasoline Engine
- ☐ Hand
- ☐ Natural Gas
- ☐ Windmill
- ☐ Other (*please specify*):

HORSE POWER RATING OF MOTOR
300

SECTION 3. PUMP TEST

Pump Test Data

DATE WELL TESTED
12/5/2011

STATIC WATER LEVEL (A)
429.5 Feet Below Land Surface

PUMPING WATER LEVEL (B)
514.9 Feet Below Land Surface

DRAWDOWN [(B) – (A)]
85.4 Feet Below Land Surface

TEST PUMPING RATE
800 Gallons Per Minute

DURATION OF PUMP TEST (Minimum 4 Hours)
6 Hours

TOTAL PUMPING LIFT
780 Feet

FOR FLOWING WELL, MEASURED SHUT IN HEAD ☐ FT ☐ PSI

Method of Discharge Measurement

CHECK ONE

- ☐ Bailer
- ☐ Bucket – Barrel – Stopwatch
- ☐ Current
- ☐ Estimated – Air Lift
- ☐ Gauge
- ☒ Meter
- ☐ Orifice
- ☐ Volume
- ☐ Weir – Flume
- ☐ Other (*please specify*):

Method of Measuring Water Level

CHECK ONE

- ☐ Air Line
- ☒ Electric Measuring Line (Sounder)
- ☐ Steel Tape
- ☐ Other (*please specify*):

I HEREBY CERTIFY that the above statements are true to the best of my knowledge and belief according to A.R.S. § 45-600(B).

SIGNATURE OF WELL OWNER Leslie Graser

Digitally signed by Leslie Graser
DN: cn=Leslie Graser, c=US, o=City of Prescott, ou=Public Works, email=leslie.graser@prescott-az.gov
Reason: I agree to the specified portions of this document
Date: 2020.05.07 17:01:09 -07'00'

DATE 5/7/2020

MATRIXNEWORLD
Engineering Progress

APPENDIX D

Model Documentation

Matrix New World Engineering
123 East Goodwin St, Ste 200
Prescott, AZ 86303
928.771.0610 928.771.0748
mnwe.com WBE

MATRIXNEWORLD
Engineering Progress

November 4, 2021

Mr. Jeff Inwood
Chief Hydrologist
Arizona Department of Water Resources
1110 West Washington Street, Suite 310
Phoenix, Arizona 85007

Subject: ***Summary Report – Modifications to the 2021 Prescott Active Management Area Groundwater Flow Model and a Description of the 100-Year Assured Water Supply Model Setup***

Dear Mr. Inwood,

Matrix New World Engineering, Land Surveying and Landscape Architecture, PC (Matrix) has prepared the following letter report documenting modifications and corrections made to the Arizona Department of Water Resources (ADWR) 2021 Prescott Active Management Area (AMA) Groundwater Flow Model Update (2021 PrAMA Model) which was released in June 2021. The ADWR Department of Assured and Adequate Water Supply is currently reviewing several applications for which results of the model must be approved before issuance of an Assured Water Supply (AWS). This letter report provides documentation of the work conducted to modify the model and construct a 100-year predictive scenario for demonstrating compliance with the physical availability criteria of the Assured Water Supply program.

Model Modifications - Historical Time Period

The 2021 PrAMA Model files released by ADWR in June 2021 were found to have an inconsistent time setup and incorrect reported pumping for recent years. As discussed with ADWR staff in the meeting with Matrix on September 30, 2021, the following changes have been made to the 2021 PrAMA Model:

- Revised the model time and stress period (SP) setup
- Removed four SPs to simulate conditions through 2019 using the revised time setup
- Corrected simulated pumping to match reported pumping plus exempt pumping
- Corrected artificial recharge inputs from 2005 through 2019
- Revised evapotranspiration (ET) inputs for cells representing Del Rio Springs
- Reworked input packages to match the revised stress period setup, including:
  - Extended the general head boundary (GHB) assumptions
  - Summed annual recharge (per component) and applied it to revised stress period setup
  - Applied stream package assumptions to match ADWR model
- Activated model layer 2 in cell (23, 34) to simulate pumping at well 55-227109

Historically, the PrAMA model was constructed to simulate two stress periods per year so that model inputs could be varied seasonally, with 155 days in a winter stress period (November through March) and 210 days in a summer stress period (April through October). The 2021 PrAMA model was released with four occurrences of extra stress periods, with an out-of-sync number of days compared to the usual 155/210 cycle. Matrix removed the extra stress periods and revised the stress period setup to reflect a consistent 155/210 cycle to match historical versions of the model. This change results in a reduction in the total number of stress periods for the model from 164 to 160, although retaining the total number of years (80). Additionally, the incorporation of leap years was added to the model, adding one extra day every four years, therefore the number of days in the simulation increased from 29,200 to 29,221. A plot of the stress period setup in the ADWR 2021 PrAMA Model is included on **Attachment A**.

The model pumping package (WEL) was modified from 2012 through 2019 to correct the reported pumping in the historical period with the 160 stress periods instead of 164 stress periods. ADWR simulated pumping was left unchanged prior to year 2012. A graph showing reported pumping (RoGR Database), 2014 ADWR PrAMA Model simulated pumping (as a comparison to the 2021 version of the model), the 2021 ADWR PrAMA Model simulated pumping, and the 2021 Matrix modified PrAMA Model simulated pumping is provided on **Attachment B**. As of 2019, there were approximately 6,900 exempt wells in the PrAMA active model domain. The simulated pumping volume for exempt wells is greater than what is reported annually to ADWR.

Simulated recharge in the historical period was analyzed per component of recharge. Stream, mountain front, agriculture, and negative boundary condition recharge volumes remain unchanged from the ADWR 2021 PrAMA Model. Matrix modified the component of artificial recharge to match reported volumes of USF recharge per an ADWR-provided spreadsheet obtained through ADWR Public Records Request on February 17, 2021. The difference in USF recharge volumes is negligible as shown in **Attachment C1**. Careful consideration was taken to make sure all recharge at USFs was incorporated into the model. Water budget component plots are provided in **Attachments C1** thru **C6**.

The ET package was modified to minimize the increased simulated baseflow at Del Rio Springs in the ADWR 2021 PrAMA Model (shown in **Attachment D**); to continue the trend of baseflow simulated in the ADWR model prior to 2012. The simulated baseflow at Del Rio Springs is plotted on the ET water budget graph in **Attachment C6**.

Layer 2 in cell (23, 34) was activated to match the approved model for Ventura Ranch AWS (27-701036.0000), and to simulate the Ventura Ranch issued demand at well 55-227109. Hydraulic conductivity applied to this cell is 1.66 feet per day in the horizontal direction, and 0.02106 feet per day in the vertical direction. These aquifer properties are consistent with the approved Ventura Ranch model (June 2020).

100-Year Model Construction

Using the modified 2021 PrAMA Model as a base, Matrix prepared a 100-Year AWS Model scenario to simulate pumping of current and committed demands. The 100-year projection period represents the period from November 2020 through October 2120 which corresponds to model stress periods 163 through 362. Simulated stress periods are setup with the same seasonal cycle as the historical period (155/210 day, with leap years incorporated), with 10 time steps per stress period, and extending the multiplier of 1.2 throughout

the end of the simulation, with exception of stress periods 313 through 316 where one time step per stress period was assigned. Key data and assumptions that were built into to the 2021 AWS PrAMA Model scenario are as follows:

- Extended the model time period for November 2020 through October 2120
- Added committed groundwater pumping demands for approved Designations, Certificates, and Analyses of AWS in the model domain
- Repeated 2019/2020 pumping at non-exempt / non-AWS and exempt wells
- Extended recharge components: agriculture, stream, negative boundary condition, and mountain front
- Removed artificial recharge at Underground Storage Facilities
- Extended evapotranspiration, general head boundary condition, and stream inputs

A summary of the AWS current and committed demands in the model (November 2021) are provided in **Attachment E**. The majority of AWS demand in the PrAMA is met by a major water provider. Exceptions to this include dry lot subdivisions and a few AAWS subdivisions for which the provider is undetermined. In most cases each entry in the WEL package is annotated with the ADWR well registration number (55-number), well owner, and/or right number.

The following corrections were made to committed demands in the WEL package:

- Demand of Wilhoit Water Company (Wilhoit WC) was simulated in cell (16,14) at the ADWR permitted rate of 35 acre-feet per year (ac-ft/yr). Wilhoit WC is not an AWS pumping well.
- Demand for the Willow Lakes Estates (27-200407.0000) AWS was removed because that subdivision is located outside the model domain and is served by City of Prescott.
- Poquito Valley Development (27-200236.0000) AWS demand (dry lot) was moved from cell (14,16) and evenly distributed to 6-cells in rows 17 through 22, column 27 to correctly match with the project location and the ADWR AWS shapefile.
- Rancho Hi Meadows (53-501263.0000) was moved from cell (44,39) to cell (43,40) to match with Heritage Point WEL package
- Demand for Hawksnest Estates (27-700399.0000) and Heritage Farms (28-700836.0000) was moved from cell (16,15) to cell (10,13) to correctly simulate pumping from well 55-628560 where it was modeled originally in the approved hydrologic studies, respectively.
- Demand of the dry lot subdivision Vista Grande Estates, Unit IV (27-300323.0000) was corrected from cell (20,28) to cell (14,16) to match the ADWR AWS shapefile.
- Demand for Mingus Meadows Estates (28-500006.0000) was removed from the model simulation because the Analysis of AWS expired in 2016.
- Analysis of AWS demand for Old Home Manor (28-701146.0000) was distributed proportionally with simulated Town of Chino Valley pumping wells that were used in the Physical Availability Demonstration (51-701178.000)

During the 100-year projection period, each of the non-exempt agricultural wells are assigned a pumping rate of zero during winter stress periods, and the full pumping rate during the summer stress period. Several non-exempt, non-AWS pumping wells in the Heritage Pointe WEL package were found to have been incorrectly assigned as agricultural pumping. These wells have been changed to pumped continuously. Several new production wells owned by the Town of Prescott Valley (Town) has allowed them to shift pumping from the Central (Santa Fe) Well Field to wells in the North Well Field. Distribution of Town pumping in the projection period is based on average reported pumping for the period 2017 through 2020. City of Prescott also has a new production well: Airport No.5 (55-229228) which was added to the 100-year predictive period in model cell (row = 22, column = 19).

Recharge components were analyzed and extended into the 100-year predictive period. Agricultural recharge was applied to cells and rates to match historical year 2017. From 2000 through 2017 represents a recent pattern of agricultural usage, which has decreased substantially compared to previous years. Mountain front recharge is simulated as constant values through the historical period, and therefore was held constant throughout the entire predictive period. Stream recharge during the historical period (i.e. stress period 1 through stress period 160) was repeated as a cycle through the end of the predictive simulation (stress period 362). Reported 2019 artificial recharge was repeated in 2020, then removed starting in 2021. Plots of simulated recharge, per component, are provided in **Attachment F**.

Model input package values of evapotranspiration (ET) and general head boundary (GHB) were held constant from 2019 through the end of the simulation. Inputs for the stream package during the steady state were repeated during the projection period in the same manner as stream recharge values. Plots of water budget components for ET, general head, and stream flows both in and out of the model are provided in **Attachment C**.

Model Results

Comparison of the ADWR 2021 PrAMA Model percent discrepancy for the historical period before and after modifications are shown in **Attachments G1** and **G2**. The Matrix modified PrAMA Model has a percent discrepancy of less than 1.0 for all but two time steps and has a max percent discrepancy of 1.74 in the historical period. Analysis of the output file provided by ADWR, shows that the ADWR model percent discrepancy was less than 1.0 for all but five time steps and has a max percent discrepancy of 3.27. The cumulative percent discrepancy in the Matrix modified PrAMA Model is less than 0.12 in the historical period; the cumulative error in the ADWR model was less than 0.19.

The 100-year AWS PrAMA Model percent discrepancy spikes five times in the 362 stress periods to values between 6.63 and 8.52. The spikes are due to model cells going dry (mostly in layer 1) and associated higher water level residuals around the dry cells. For the entire AWS simulation, the percent discrepancy is less than 2.0 for 9 percent of the reported time steps. The cumulative percent discrepancy for the entire simulation, including the historical and predictive periods is 0.53.

MATRIXNEWORLD
Engineering Progress

If you have any questions or comments regarding this report, please contact Dylan Easthouse at (928) 771-0610.

Sincerely,

Matrix New World Engineering

Elizabeth Mora
Senior Project Hydrogeologist / Modeler

Dylan Easthouse, R.G.
Senior Project Hydrogeologist

Attachments:

Attachment A – Plot of ADWR 2021 PrAMA Model Time Setup and Pumping per Stress Period
Attachment B – Plot of Annual Simulated and Reported Pumping
Attachment C1 – Water Budget Plot, Recharge In
Attachment C2 – Water Budget Plot, Wells Out
Attachment C3 – Water Budget Plot, General Head Boundary Out
Attachment C4 – Water Budget Plot, Recharge Out
Attachment C5 – Water Budget Plot, Net Stream Out
Attachment C6 – Water Budget Plot, Evapotranspiration Out
Attachment D – ADWR Figure 11a Showing Del Rio Base Flow
Attachment E – Table of Current and Committed Demands in the PrAMA Model (11/21)
Attachment F1 – Stream Recharge Plot
Attachment F2 – Incidental Recharge Plots
Attachment F3 – Artificial Recharge Plot
Attachment G1 – ADWR 2021 Model Percent Discrepancy, Historical Period
Attachment G2 – Matrix Modified Model Percent Discrepancy, Historical Period
Attachment G3 – Matrix Modified Model Percent Discrepancy, Historical and Predictive Periods

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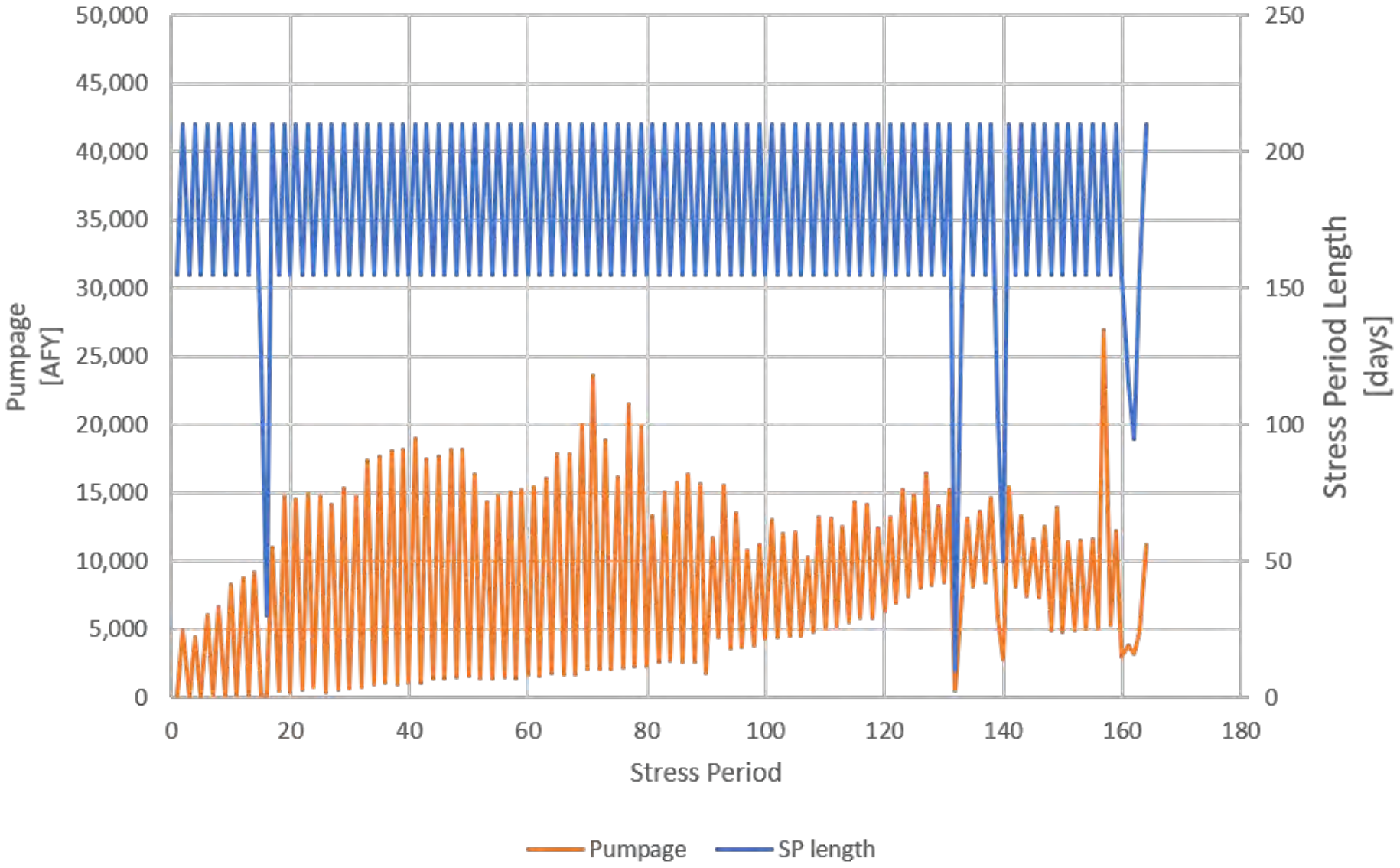
ATTACHMENT A

Attachment A – Plot of ADWR 2021 PrAMA Model Time Setup and Pumping per Stress Period



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November 4, 2021

ADWR MODEL STRESS PERIOD SETUP AND SIMULATED PUMPING PER STRESS PERIOD

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

A

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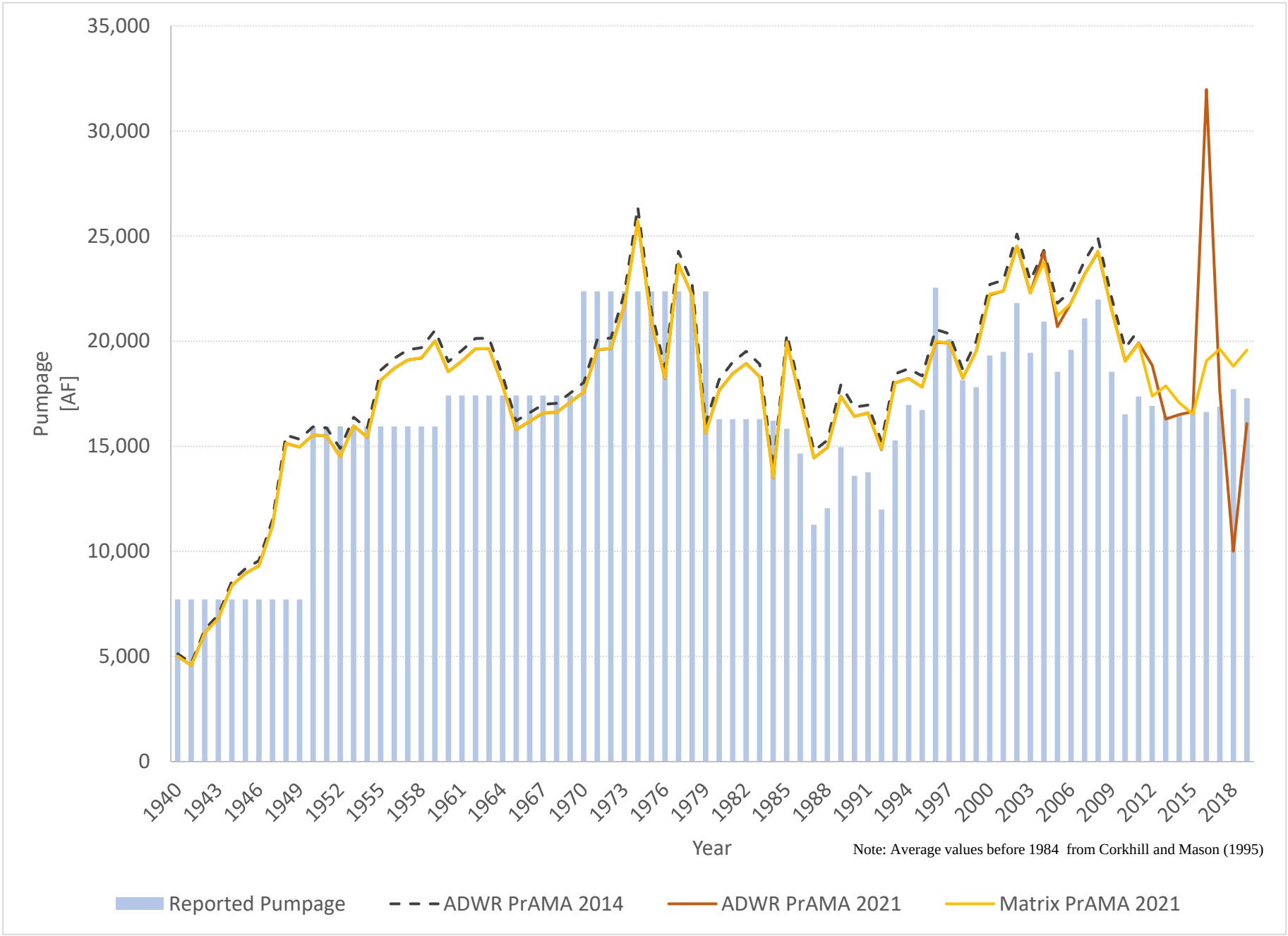
ATTACHMENT B

Attachment B – Plot of Annual Simulated and Reported Pumping



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November 4, 2021

SIMULATED AND REPORTED PUMPING

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

B

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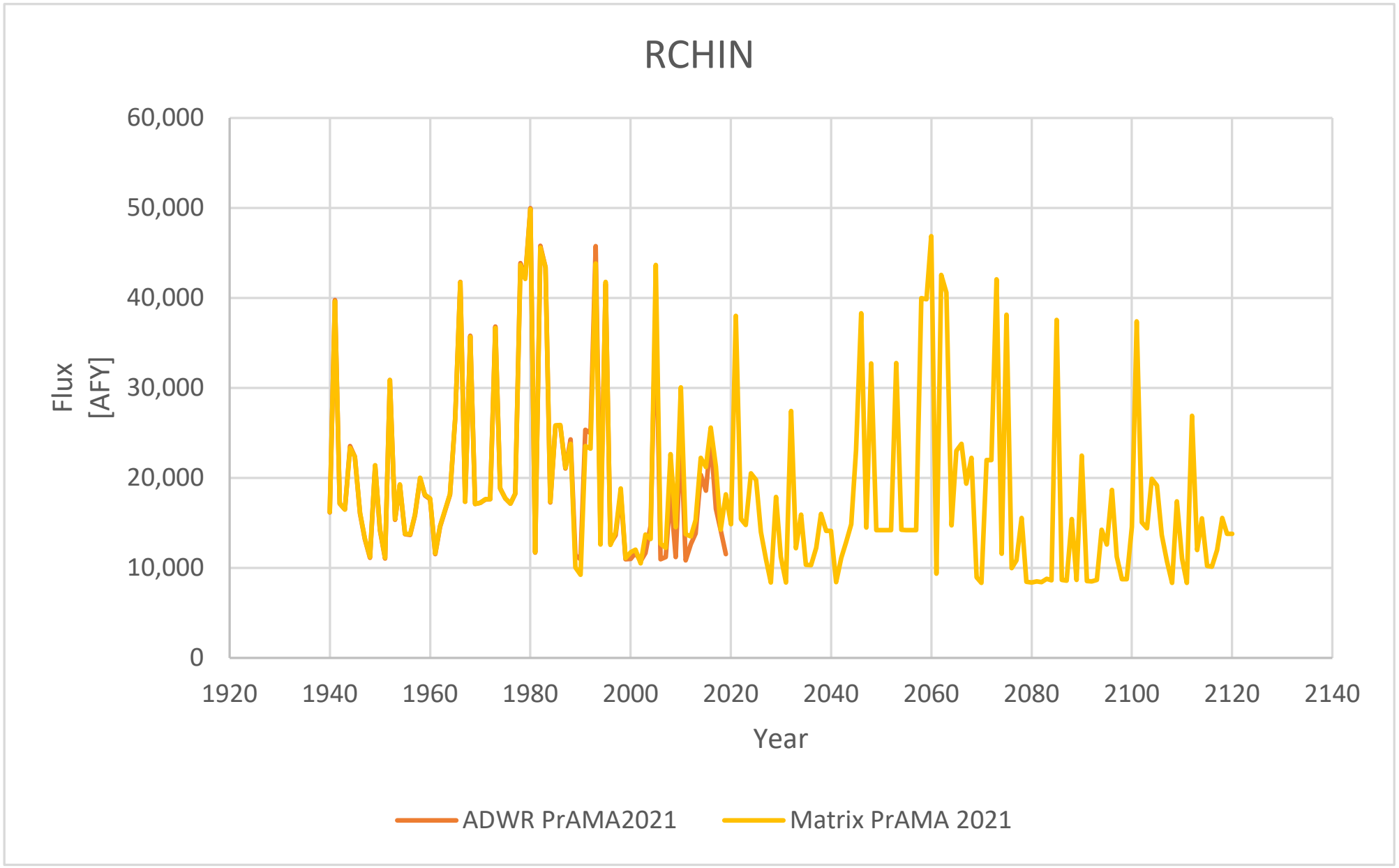
ATTACHMENT C

Attachment C1 – Water Budget Plot, Recharge In
Attachment C2 – Water Budget Plot, Wells Out
Attachment C3 – Water Budget Plot, General Head Boundary Out
Attachment C4 – Water Budget Plot, Recharge Out
Attachment C5 – Water Budget Plot, Net Stream Out
Attachment C6 – Water Budget Plot, Evapotranspiration Out



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November 4, 2021

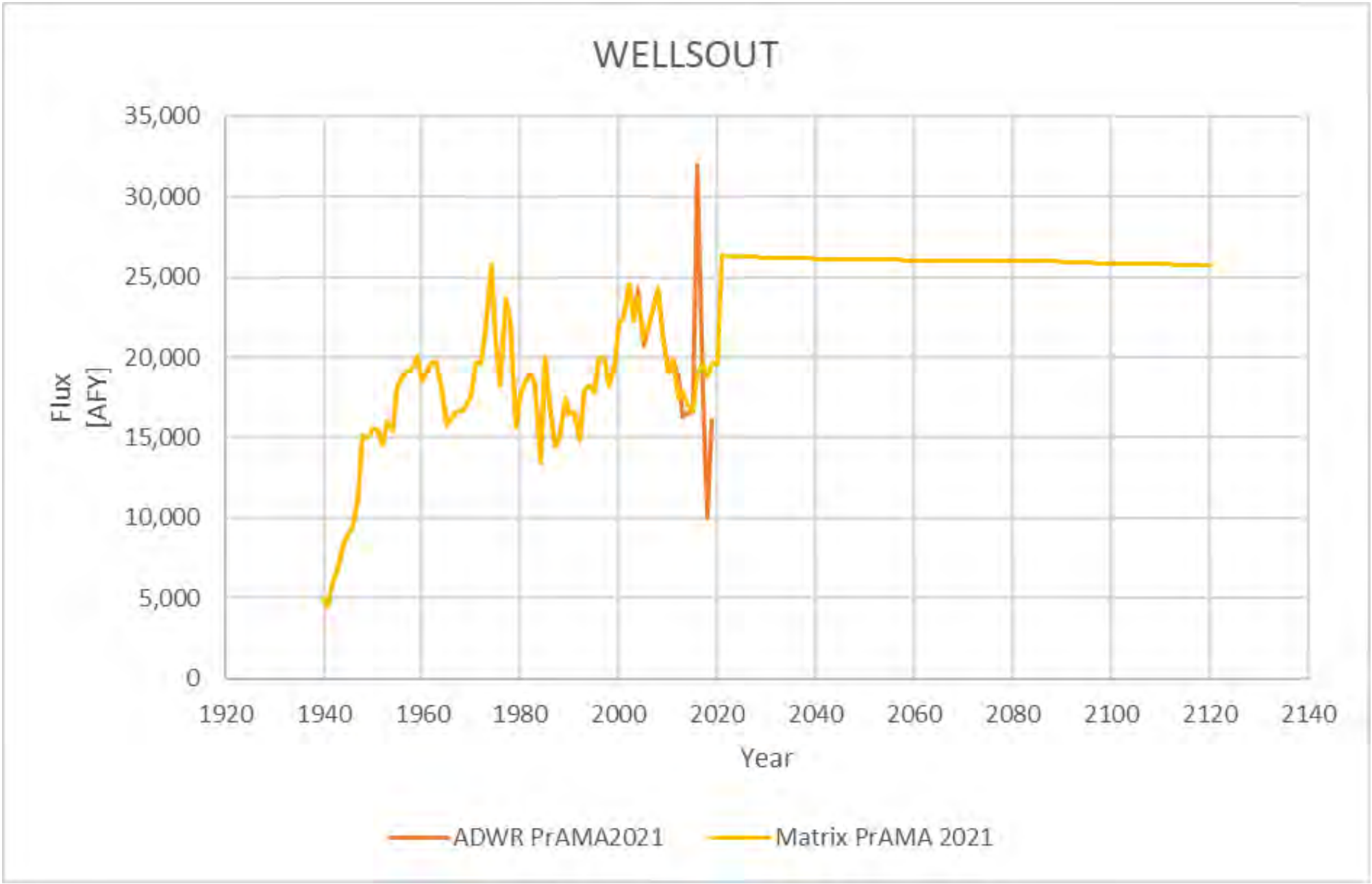
WATER BUDGET PLOT

RECHARGE IN

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

C1



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November 4, 2021

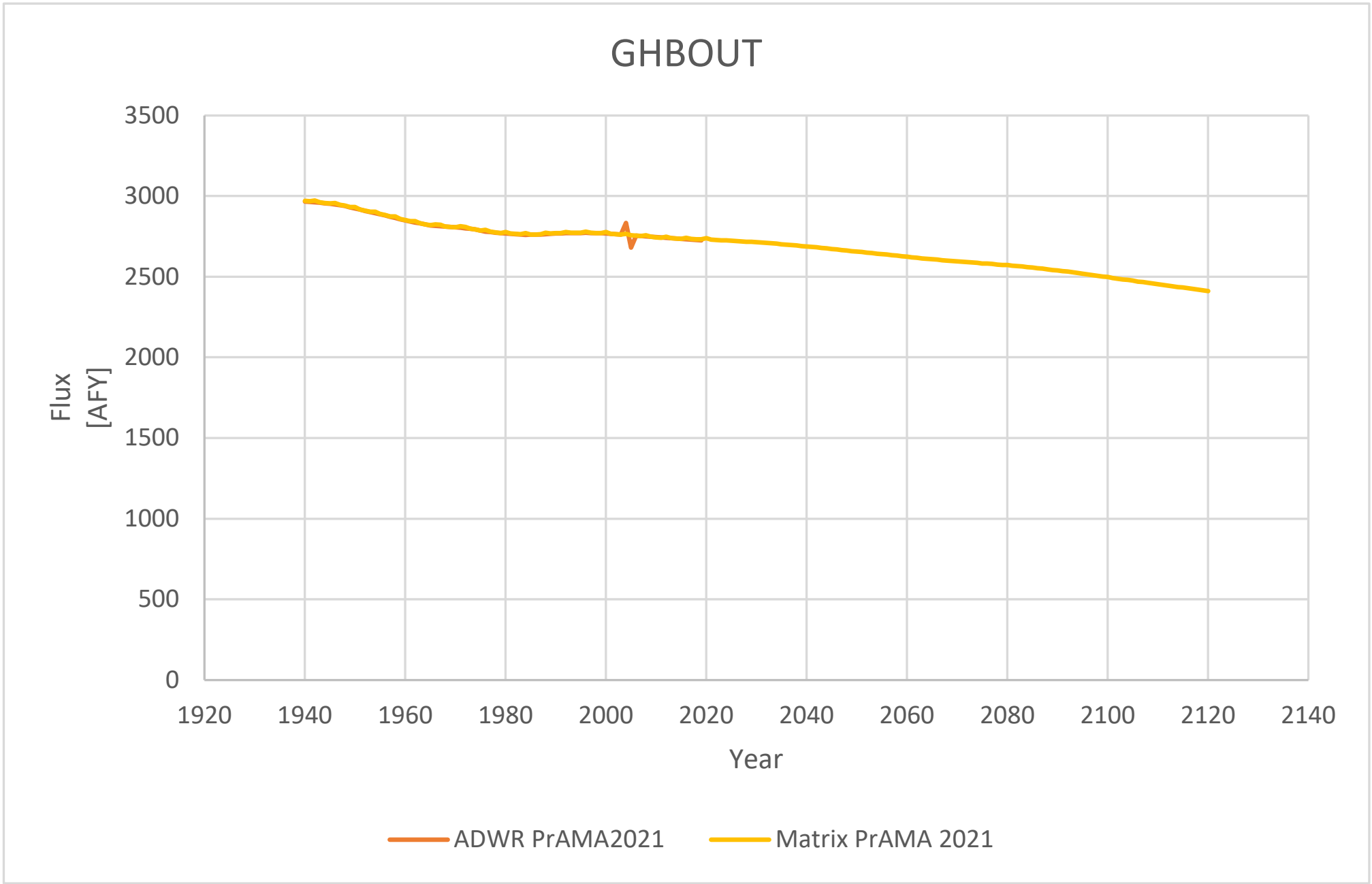
WATER BUDGET PLOT

WELLS OUT

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

C2



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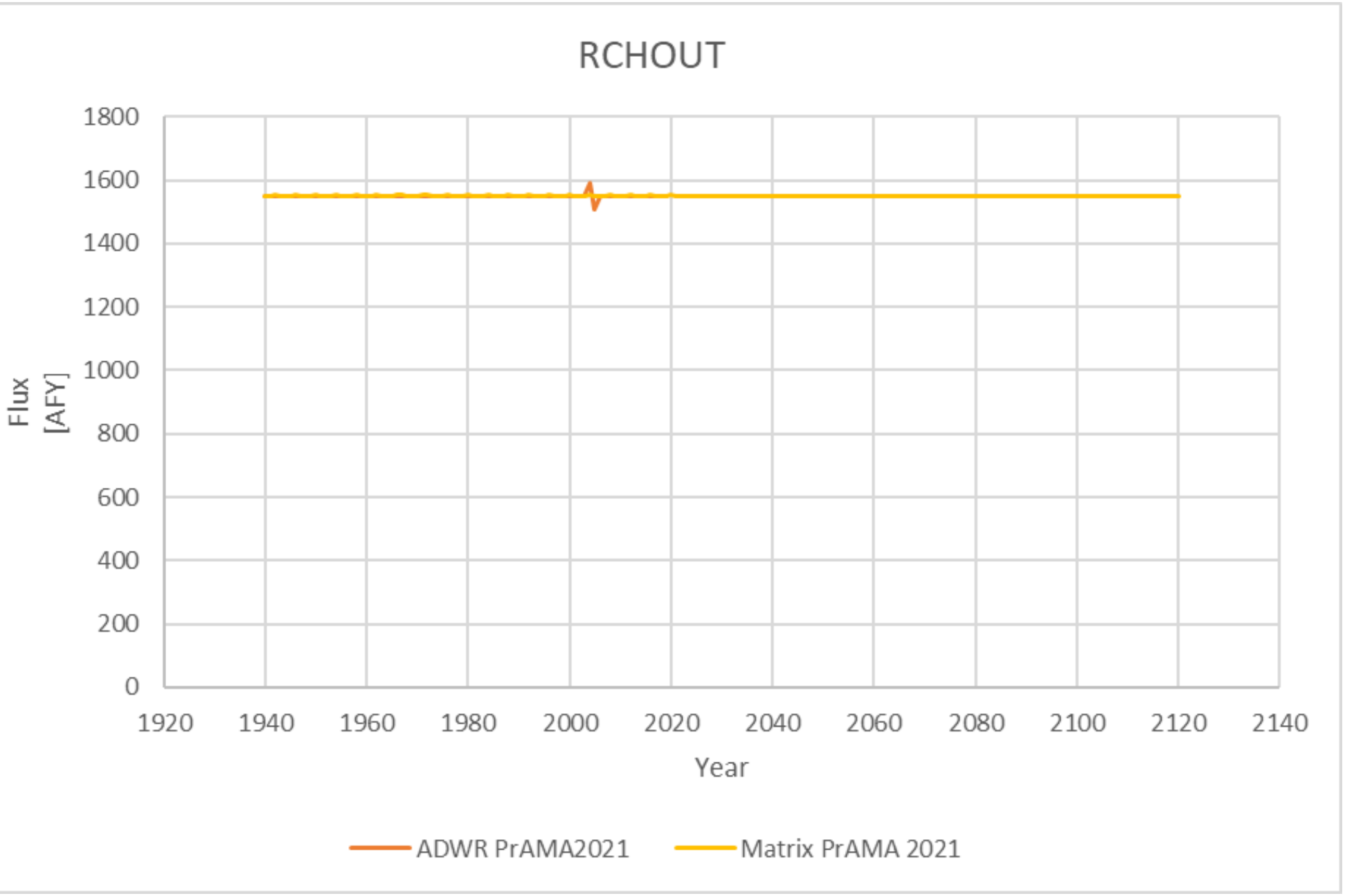
WATER BUDGET PLOT

GENERAL HEAD BOUNDARY OUT

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

C3



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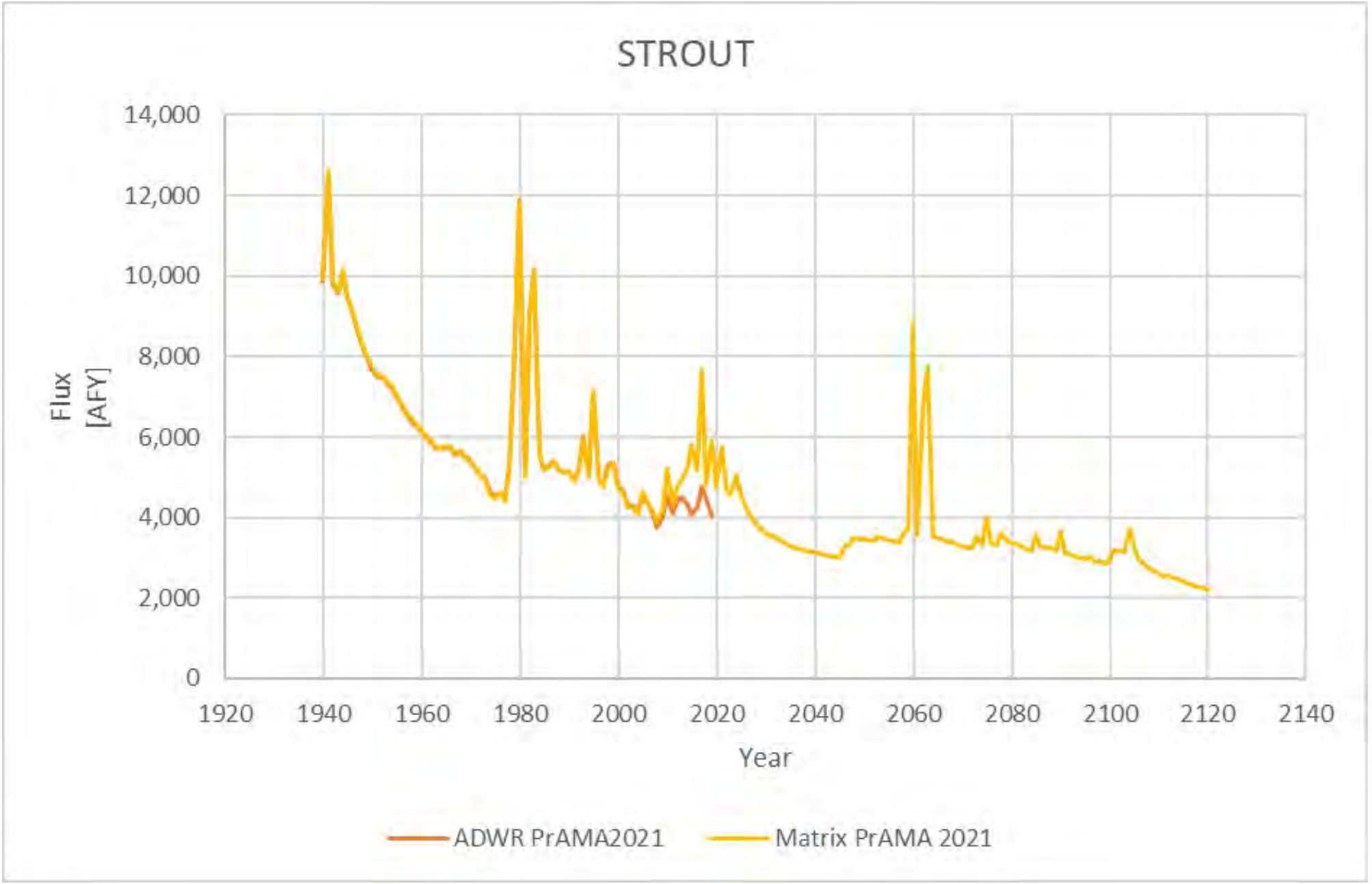
WATER BUDGET PLOT

RECHARGE OUT

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

C4



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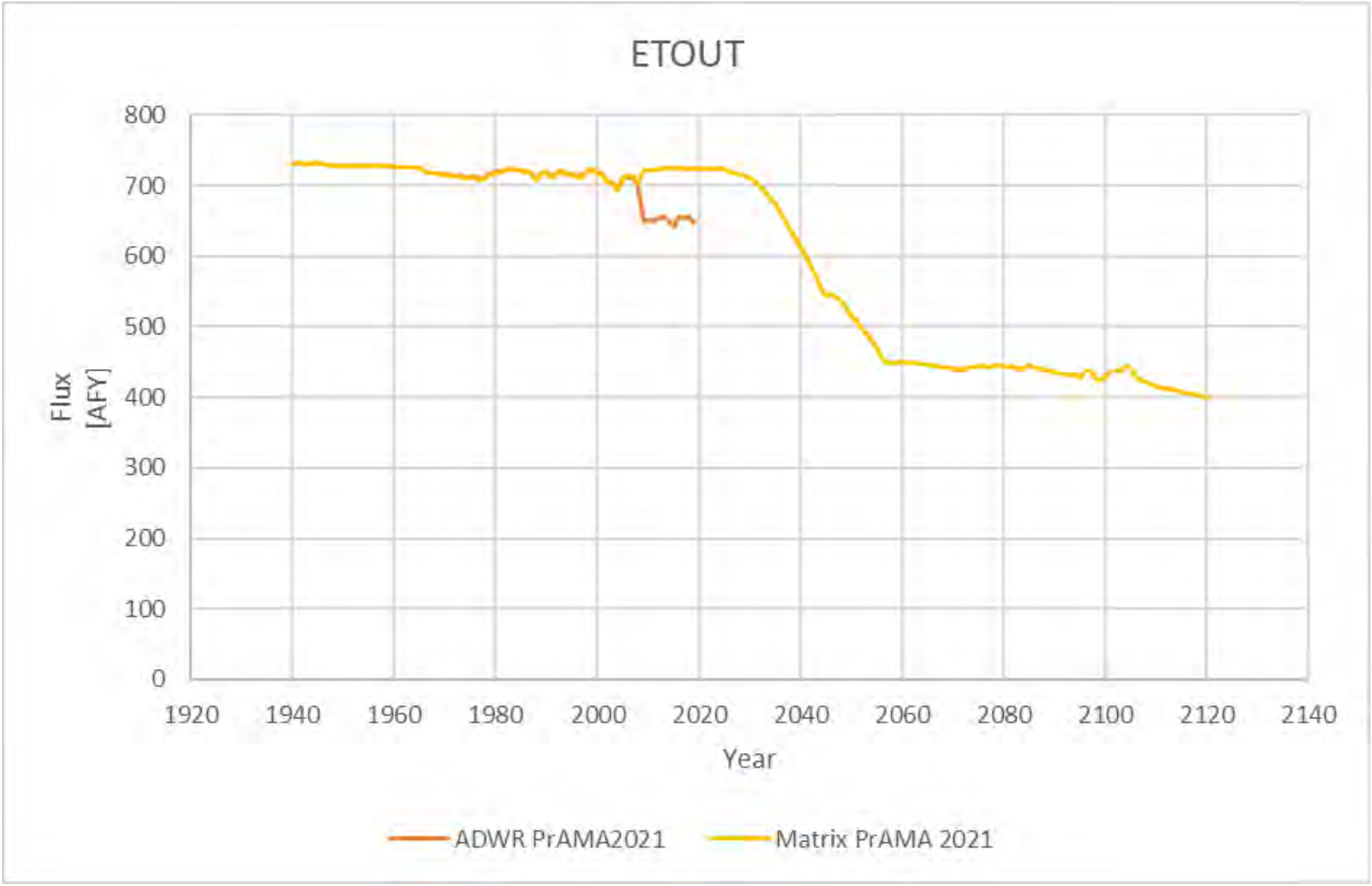
WATER BUDGET PLOT

NET STREAM OUT

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

C5



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WATER BUDGET PLOT

EVAPOTRANSPIRATION OUT

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

C6

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ATTACHMENT D

Attachment D – ADWR Figure 11a Showing Del Rio Base Flow

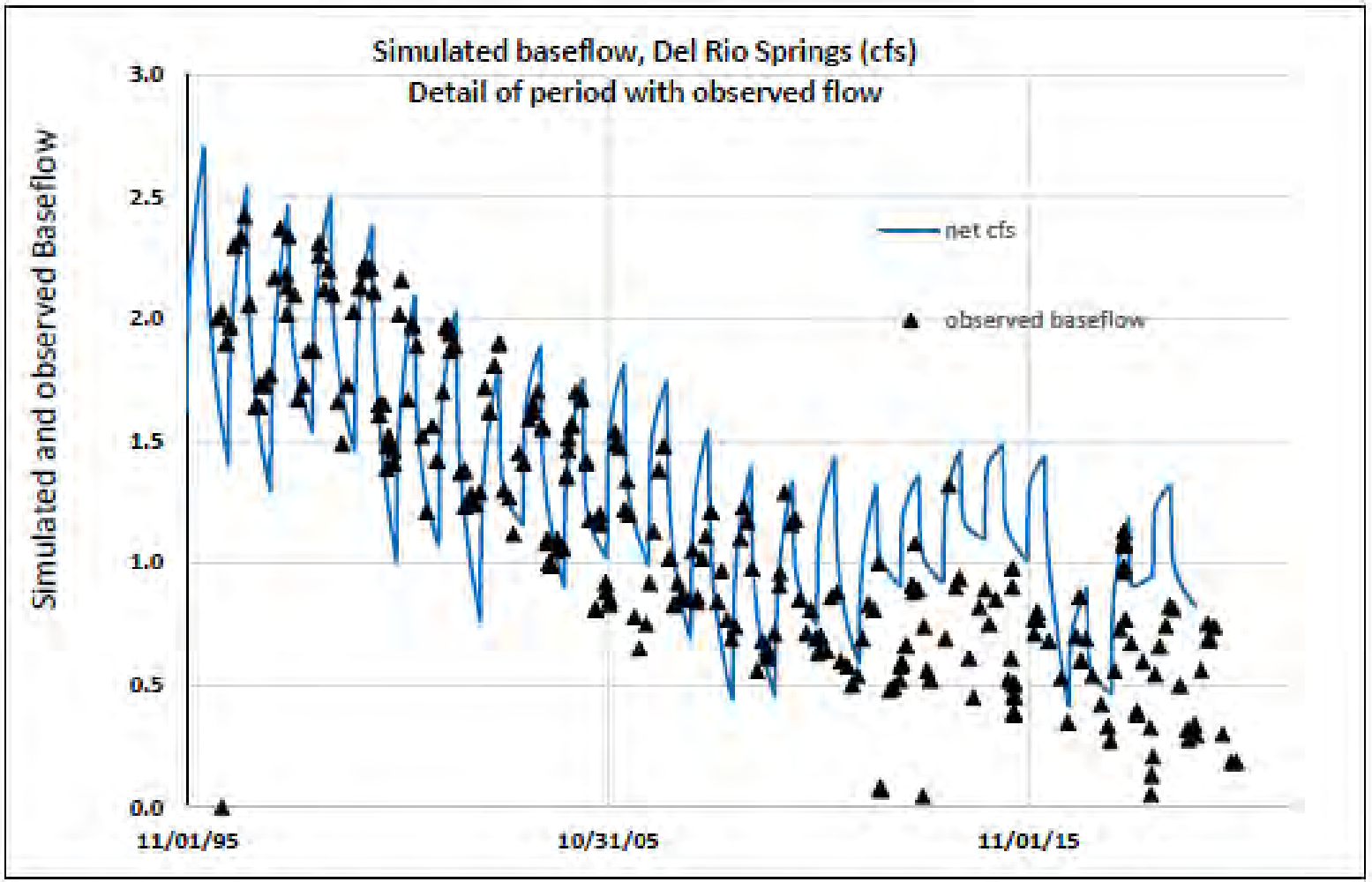

Figure 11a and 11b. *Simulated and observed flow at Del Rio Springs (top); detail showing seasonality for period with high observation sample rate (bottom).*

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ADWR FIGURE 11a SHOWING
DEL RIO BASEFLOW

2021 Prescott AMA Model Modifications

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D

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ATTACHMENT E

Attachment E – Table of Current and Committed Demands in the PrAMA Model (11/21)

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SUBDIVISION NAME	QUAD	TWP	RNG	SECTIONS	LOTS	FILE NUMBER	ISSUED DATE	PRIMARY PROVIDER NAME	APP TYPE	GW (AFA)	NOTES
LITTLE CHINO SUB-BASIN (LIC)											
4 North Business Park	B	16	2	3	15	27-701156.0000	pending	DRY LOT	CAWS	27.05	
Antelope Village	B	15	1	23,26	1440	27-300522.0000	12/30/1999	Town of Prescott Valley	CAWS	474	
Appaloosa Meadows Phases I,II and III	B	16	2	9,10	318	27-300352.0000	1/16/1998	Appaloosa Water Co	CAWS	108.1	
Aspen Acres	B	13	2	7	10	53-500302.0000	4/10/1980	City of Prescott	Water Report	0	incl. in 86-401501.0001
Bee Mountain Estates	B	16	2	27	20	27-200007.0000	4/20/1987	DRY LOT	CAWS	20	
Bright Star Phase 3	B	16	2	24	166	27-500060.0000	6/20/2007	Town of Chino Valley	CAWS	38.17	
Bright Star, Unit 1, Phase 2, Unit 2, Phase 2	B	16	2	13,24	125	27-401835.0000	10/21/2005	Town of Chino Valley	CAWS	35.42	
BrightStar at Chino Valley	B	16	2	24	80	27-400861.0000	8/18/2003	Town of Chino Valley	CAWS	27.543	
Century Ranch	B	16	2	13	425	28-701052.0000	9/17/2019	Undetermined	AAWS	281.45	
Chino de Manana	B	16	2	10	20	27-200053.0000	5/15/1989	DRY LOT	CAWS	10	
Chino Meadows #4	B	16	2	23	98	27-200052.0000	8/6/1994	Town of Chino Valley	CAWS	27.7	
Chino Valley Business Park & Marketplace	B	16	2	15	13	27-300455.0000	7/14/1998	DRY LOT	CAWS	13	
Colonial Villas	B	16	2	23	60	27-700393.0000	1/15/2008	Town of Chino Valley	CAWS	10.97	
Commerce Park	B	16	2	10	9	27-300334.0000	10/16/1997	DRY LOT	CAWS	4.02	
Del Sol	B	16	2	14	20	27-701206.0000	pending	DRY LOT	CAWS	71.41	Demand simulated at well 55-926450
Easy Street Estates	B	16	2	16	42	27-300511.0000	3/29/1999	DRY LOT	CAWS	9.6	
Fire Sky Ranch	B	16	2	21	18	27-300440.0000	7/27/1998	DRY LOT	CAWS	4.1	
Gold Rush Ranches	B	16	2	21	16	27-200122.0000	4/6/1993	DRY LOT	CAWS	5.6	
Granite Mountain Homesites #3	B	15	2	31	8	27-200128.0000	9/15/1982	DRY LOT	CAWS	3	
Granite Mountain Homesites #4	B	15	2	31	19	27-200126.0000	8/18/1986	Granite Mtn. Water Co.	CAWS	3.5	
Granite Oaks Estates	B	15	2	30	10	27-300400.0000	8/27/1998	Granite Oaks Water Users Assoc.	CAWS	3.36	
Granite Oaks I, Units 1, 2, 3	B	15	2	19	160	27-200129.0000	3/6/1990	Granite Oaks Water Users Assoc.	CAWS	117.6	
Granite Oaks I, Units 4 & 5	B	15	2	19	141	27-200130.0000	11/27/1992	Granite Oaks Water Users Assoc.	CAWS	52.7	
Granite Oaks II	B	15	2	19	14	27-200131.0000	9/28/1994	Granite Oaks Water Users Assoc.	CAWS	5.6	
Granite Park Ranch	B	15	2	30	29	27-300158.0000	8/30/1996	Granite Mtn. Water Co.	CAWS	8.57	
Grassland	B	16	2	4	16	27-200132.0000	12/15/1980	DRY LOT	CAWS	4.1	
Hawksnest Estates	B	16	2	15	150	27-700399.0000	12/19/2007	Town of Chino Valley	CAWS	37.07	
Headwaters Ranch Country Club	B	17	2	35	1385	53-500778.0000	6/18/1993	Undetermined	Water Report	1120	
Heritage Farms	B	16	2	15	145	28-700836.0000	6/5/2015	Undetermined	AAWS	156.18	
Heritage Pointe	B	16	2	9	75	31-300352.0003	10/2/2020	DRY LOT	CAWS	18.65	
Highlands Ranch	B	16	2	23	210	27-401234.0000	10/8/2004	Town of Chino Valley	CAWS	60.467	
Highlands Ranch Unit 1B & Unit 2	B	16	2	23	349	27-401741.0000	1/25/2006	Town of Chino Valley	CAWS	74.91	
I U Bar Ranch Estates	B	16	1	18,19	15	27-200147.0000	3/9/1988	DRY LOT	CAWS	11.1	
I U Bar Ranch Estates	B	16	1	18,19	56	27-200148.0000	6/12/1989	DRY LOT	CAWS	37.6	
Luna Estates	B	16	2	10	31	27-200188.0000	8/21/1989	DRY LOT	CAWS	9	
Mingus Meadows Estates	A	16	1	31	171	28-500006.0000	7/19/2007	Undetermined	AAWS	0	Expired 2016
Old Home Manor	B	16	1 & 2	7 & 12	unknown	28-701146.0000	pending	Town of Chino Valley	AAWS	1677.6	
Perkinsville 40	A	16	2	14	163	27-701162.0000	pending	Town of Chino Valley	CAWS	27.75	Demand met by wells 55-621557 and 55-595220
Point of View Patio Homes	B	15	1	35	32	27-700969.0000	1/17/2018	Town of Prescott Valley	CAWS	7.85	
Poquito Valley Development	B	15	1	2,11,14,23,26,35	48	27-200236.0000	3/9/1988	DRY LOT	CAWS	48.3	
Prescott Buttes	B	14	2	31	38	27-300581.0000	3/5/1999	City of Prescott	CAWS	0	incl. in 86-401501.0001
Quail Ridge	B	16	2	5	180	27-300493.0000	10/14/1998	Quail Ridge DWID	CAWS	71.43	
Rancho Santa Maria	B	16	2	17	87	27-200279.0000	9/26/1983	DRY LOT	CAWS	57	
Rancho Santa Maria #2	B	16	2	17	18	27-200280.0000	5/23/1994	DRY LOT	CAWS	5.04	
Rancho Santa Maria #2, 3	B	16	2	17	38	27-200281.0000	3/17/1995	DRY LOT	CAWS	10.6	
Rancho Santa Maria Unit Two	B	16	2	17	19	27-400162.0000	11/12/1999	DRY LOT	CAWS	180.3	
Royal Oaks	B	15	2	30	165	27-200294.0000	10/28/1991	Granite Oaks Water Users Assoc.	CAWS	42.3	
Royal Oaks Lots 166-185	B	15	2	30	20	27-200295.0000	4/4/1994	Granite Oaks Water Users Assoc.	CAWS	8	
Stetson Ranch	B	16	2	4	14	27-200319.0000	7/8/1985	DRY LOT	CAWS	6.27	
Sunrise	B	16	2	11	43	53-501503.0000	2/3/1977	DRY LOT	Water Report	11.02	
Tony Town	B	16	2	11	57	27-300418.0000	8/27/1998	DRY LOT	CAWS	13	
Ventura Ranch	A	15	1	17	180	27-701036.0000	6/3/2020	Ventura Ranch DWID	CAWS	34.89	
Viewpoint North, The	B	15	1	23,26,35	1986	27-300434.0000	8/27/1998	Town of Prescott Valley	CAWS	679	
Viewpoint, Phase I	B	15	1	23,26,35	112	27-300019.0000	5/15/1995	Town of Prescott Valley	CAWS	28.71	
Viewpoint, The	B	15	1	23,26,35	488	27-300183.0000	8/29/1996	Town of Prescott Valley	CAWS	168.6	
Vista de Chino	B	16	2	17	80	27-200388.0000	5/27/1987	DRY LOT	CAWS	36.9	
Vista Grande Estates, Unit IV	B	16	2	26	118	27-300323.0000	12/1/1997	DRY LOT	CAWS	40.3	
Willow Lake Estates	B	14	2	15	277	27-200407.0000	6/10/1981	City of Prescott	CAWS	0	incl. in 86-401501.0001
Yo He Wah	B	16	2	4	32	27-200408.0000	4/28/1983	DRY LOT	CAWS	14.4	
City of Prescott						86-401501.0001	12/30/2009	City of Prescott	DAWS	9466.02	GW including ext credits/groundwater allowance

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SUBDIVISION NAME	QUAD	TWP	RNG	SECTIONS	LOTS	FILE NUMBER	ISSUED DATE	PRIMARY PROVIDER NAME	APP TYPE	GW (AFA)	NOTES
UPPER AGUA FRIA SUB-BASIN (UAF)											
Antelope Park 1	B	15	1	35	102	27-300525.0000	3/2/1999	Town of Prescott Valley	CAWS	47.3	
Antelope Park 2	B	15	1	35	75	27-300526.0000	3/2/1999	Town of Prescott Valley	CAWS	121.4	
Castle Canyon Mesa #2	B	14	1	15,22	19	27-200044.0000	9/16/1992	Town of Prescott Valley	CAWS	5.43	
Castle Canyon Mesa #4	B	14	1	15	118	27-200045.0000	10/25/1993	Town of Prescott Valley	CAWS	33.7	
Chaparral Heights	A	13	1	10,15	34	27-300178.0000	1/21/1997	DRY LOT	CAWS	10.5	
Clearview Estates	A	13	1	1,12	22	27-200059.0000	11/4/1985	DRY LOT	CAWS	12.9	
Command Estates	A	13	1	12	47	27-200074.0000	9/4/1980	DRY LOT	CAWS	22.1	
Command Estates #2	A	13	1	13	17	27-200075.0000	7/21/1985	DRY LOT	CAWS	8	
Country Club Townhomes	A	14	1	28,33	76	27-200081.0000	3/11/1985	Town of Prescott Valley	CAWS	21.3	
Creekside of Prescott Phase 3	B	14	1	33	25	27-400759.0000	11/15/2002	Bradshaw Water Co	CAWS	6.24	Served by TofPV
Creekside of Prescott, Phase 1	B	14	1	33	33	27-300045.0000	10/12/1995	Bradshaw Water Co	CAWS	8.72	Served by TofPV
Creekside of Prescott, Phase 2	B	14	1	33	39	27-300513.0000	4/15/1999	Bradshaw Water Co	CAWS	12.48	Served by TofPV
Fairway Patio Homes	A	14	1	18	5	27-200117.0000	1/10/1983	Town of Prescott Valley	CAWS	4.7	
Granville Masterplan	B	14	1	3,10,15	2568	27-300494.0000	10/3/2000	Town of Prescott Valley	CAWS	1146.81	Effluent delivered - 454.8 AFA
Golden View Estates	A	13	1	12	14	27-200123.0000	6/10/1982	DRY LOT	CAWS	14	
Green View Townhomes	A	14	1	28	34	27-300527.0000	3/29/1999	Town of Prescott Valley	CAWS	9.359	
Indian Castles	A	13	1	12	17	27-200149.0000	9/4/1980	DRY LOT	CAWS	8	
Jasper Masterplan	B	14	1	4,9	2931	28-701015.0000	7/9/2019	Town of Prescott Valley	AAWS	1290.11	AWS of Phase 1 is met by TofPV effluent credits
Lynx Mountain View Estates	B	14	1	33	95	27-200189.0000	7/3/1986	Bradshaw Water Co	CAWS	24.2	Served by TofPV
Lynx Mountain View Estates	B	14	1	33	122	27-200190.0000	6/12/1989	Bradshaw Water Co	CAWS	28.7	Served by TofPV
Lynx Mountain View Estates #6	B	14	1	33	39	27-200191.0000	10/25/1993	Bradshaw Water Co	CAWS	8.3	Served by TofPV
Meadow Ranch	A	13	1	1,12	34	27-200196.0000	5/30/1995	DRY LOT	CAWS	11.4	
Meadow View	A	13	1	1,12	40	27-401979.0000	9/5/2006	DRY LOT	CAWS	10.25	
Mingus View Condominiums	B	14	1	13	12	27-401543.0000	3/18/2005	Town of Prescott Valley	CAWS	2.71	
Mingus West	A	15	1	23	468	27-300225.0000	10/16/1997	Town of Prescott Valley	CAWS	147.4	
Parker Hill	A	13	1	15	186	27-200218.0000	3/2/1982	Humboldt Water Inc.	CAWS	100.1	
Prescott Country Club	A	14	1	28,29,33	87	27-200240.0000	5/6/1987	Town of Prescott Valley	CAWS	23.2	
Prescott Country Club	A	14	1	28,29,33	104	27-200241.0000	5/8/1987	Town of Prescott Valley	CAWS	27.7	
Prescott Country Club #6	A	14	1	29	54	27-200242.0000	3/29/1994	Town of Prescott Valley	CAWS	15.2	
Prescott Country Club #6, phase 2	A	14	1	29	31	27-300111.0000	5/16/1996	Town of Prescott Valley	CAWS	8.75	
Prescott East #1,2	B	14	1	15,22	40	27-200243.0000	9/1/1981	Town of Prescott Valley	CAWS	6.81	
Prescott Valley	A	14	1	7	49	27-200244.0000	1/28/1981	Town of Prescott Valley	CAWS	12.56	
Prescott Valley	B	14	1	11,12,13	51	27-200245.0000	1/28/1981	Town of Prescott Valley	CAWS	13.07	
Prescott Valley #09	B	14	1	1	10	27-200247.0000	2/3/1981	Town of Prescott Valley	CAWS	4.7	
Prescott Valley #15	B	14	1	1	4	27-200248.0000	3/23/1981	Town of Prescott Valley	CAWS	1.03	
Prescott Valley #18-20	A	14	1	7	8	27-200249.0000	1/14/1982	Town of Prescott Valley	CAWS	2.05	
Prescott Valley #18-20	B	15	1	35	8	27-200251.0000	1/14/1982	Town of Prescott Valley	CAWS	2.05	
Prescott Valley #19	B	14	1	11	4	27-200253.0000	6/21/1993	Town of Prescott Valley	CAWS	1.14	
Prescott Valley #19	B	14	1	11	6	27-200252.0000	4/23/1987	Town of Prescott Valley	CAWS	1.08	
Prescott Valley #20	A	14	1	7	8	27-200255.0000	10/25/1993	Town of Prescott Valley	CAWS	2.88	
Prescott Valley #20	B	14	1	1	1	27-200254.0000	8/24/1981	Town of Prescott Valley	CAWS	0.26	
Prescott Valley Business Park	A	14	1	19	44	27-200256.0000	4/15/1983	Town of Prescott Valley	CAWS	72	
Prescott Valley, Town of	B	14	1	1,12,13	42	27-200257.0000	11/14/1989	Town of Prescott Valley	CAWS	9.4	
Quad Villas	B	14	1	12	8	27-200259.0000	3/17/1982	Town of Prescott Valley	CAWS	6.05	
Quad Villas #2	B	14	1	12	4	27-200260.0000	3/17/1982	Town of Prescott Valley	CAWS	1.03	
Quailwood Meadows	A	14	1	27,34,35	1012	27-300521.0000	3/29/1999	Town of Prescott Valley	CAWS	390.77	
Quailwood Meadows Townhomes	A	14	1	34	204	27-401653.0000	8/29/2005	Town of Prescott Valley	CAWS	64.16	
Rancho Hi Meadows	A	13	1	11	6	53-501263.0000	5/5/1980	DRY LOT	Water Report	1.54	
Rolling Ridge Ranches	A	13	1	11	10	27-200293.0000	10/6/1980	DRY LOT	CAWS	4.7	
StoneRidge	B	14	1	26,27,35	3053	27-300483.0000	4/14/2000	Town of Prescott Valley	CAWS	829.14	Effluent delivered - 450 AFA
Town and Country Industrial Pk	B	14	1	22,23	43	27-200352.0000	8/3/1984	Town of Prescott Valley	CAWS	43	
Town and Country Industrial Pk	B	14	1	23	35	27-200351.0000	12/10/1982	Town of Prescott Valley	CAWS	8.97	
Town and Country Valley Mall	B	14	1	14,23	300	27-200353.0000	3/30/1981	Town of Prescott Valley	CAWS	54	
Victorian Estates Unit I & II	B	14	1	21,28	179	27-200375.0000	5/23/1994	Town of Prescott Valley	CAWS	41.1	
Villages at Lynx Creek	A	14	1	27,34	515	27-200380.0000	4/11/1989	Town of Prescott Valley	CAWS	57.7	
Villas, The	B	14	1	13	8	27-200384.0000	9/14/1982	Town of Prescott Valley	CAWS	2.05	
Vista View Estates	A	13	1	1,12	8	27-200387.0000	7/4/1980	DRY LOT	CAWS	2.05	
Wagon Wheel Condominiums	A	14	1	33	4	27-200394.0000	7/12/1988	Town of Prescott Valley	CAWS	0.8	
White Peaks	A	13	1	14	76	53-501680.0000	10/15/1974	Humboldt Water Inc.	Water Report	11	

Total AWS Demand in UAF (AFA) **4,838**
Total AWS Demand in LIC (AFA) **15,527**
Total AWS Demand in PrAMA (AFA) **20,365**

Notes:
AFA = acre-feet per year

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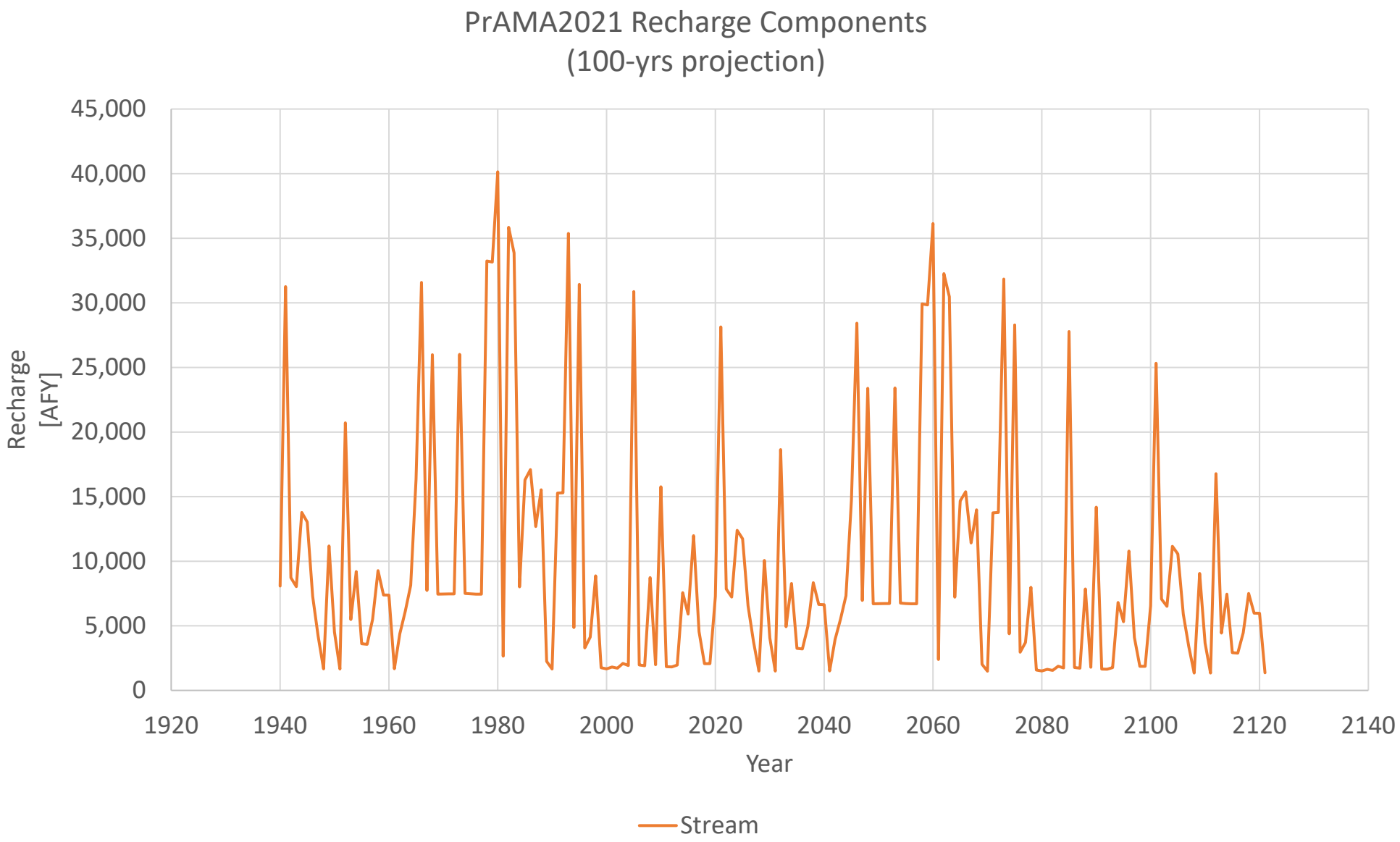
ATTACHMENT F

Attachment F1 – Stream Recharge Plot
Attachment F2 – Incidental Recharge Plots
Attachment F3 – Artificial Recharge Plot



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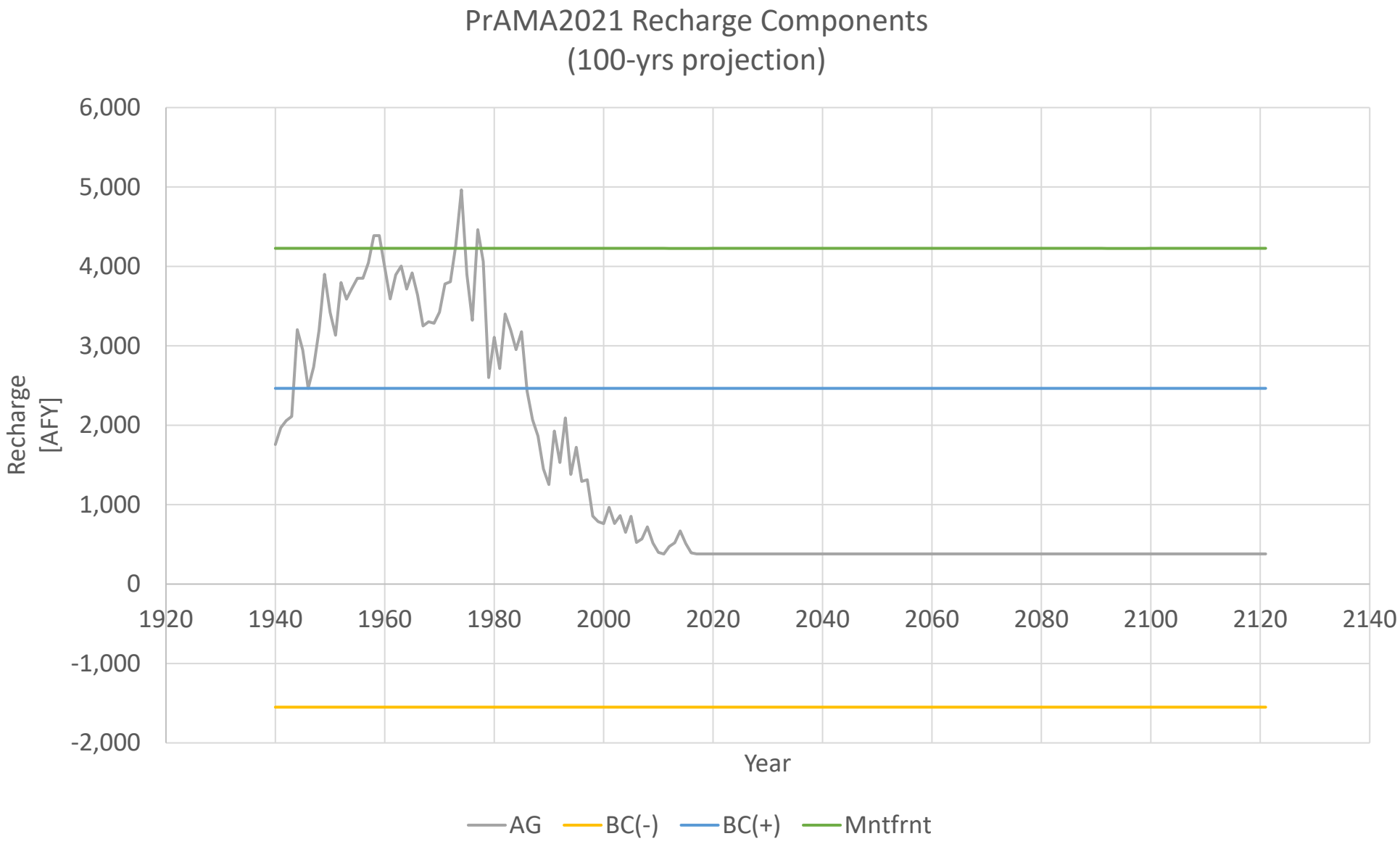
November 4, 2021

INCIDENTAL RECHARGE PLOTS

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

F1



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Engineering Progress

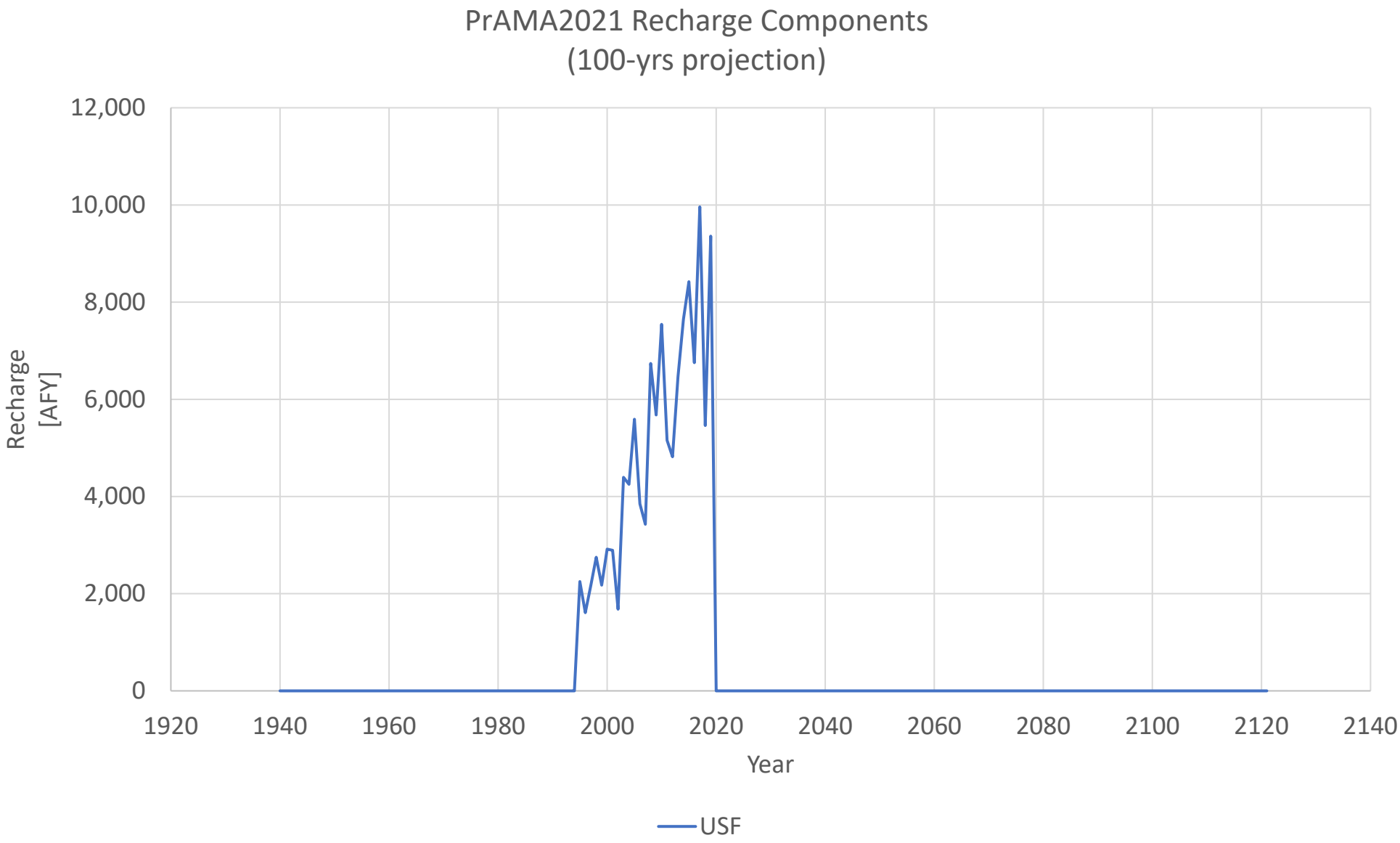
November 4, 2021

INCIDENTAL RECHARGE PLOTS

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

F2



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ARTIFICIAL RECHARGE PLOTS

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

F3

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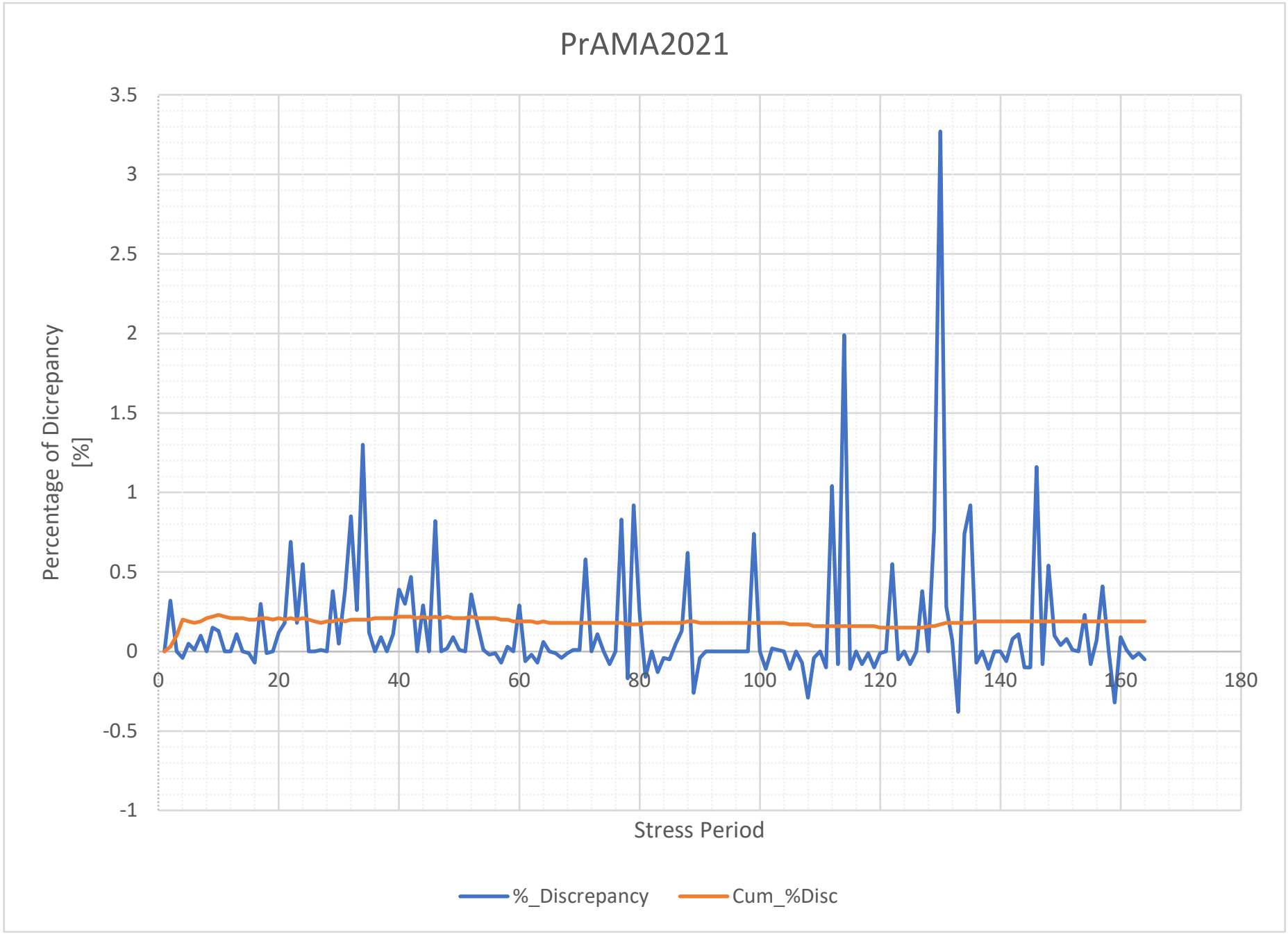
ATTACHMENT G

Attachment G1 – ADWR 2021 Model Percent Discrepancy, Historical Period
Attachment G2 – Matrix Modified Model Percent Discrepancy, Historical Period
Attachment G3 – Matrix Modified Model Percent Discrepancy, Historical and Predictive Periods



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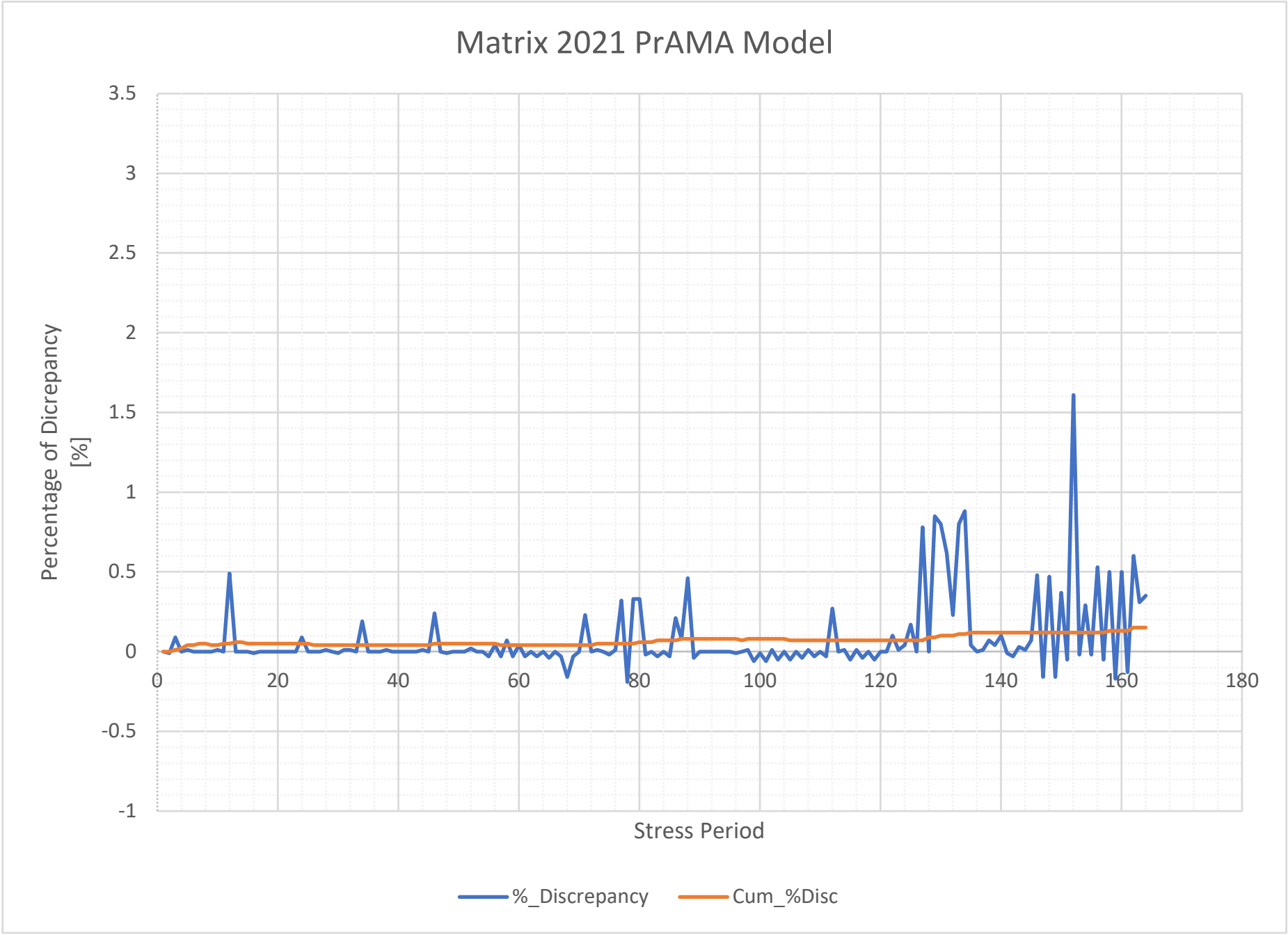
ADWR 2021 MODEL PERCENT DISCREPANCY

HISTORICAL PERIOD

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

G1



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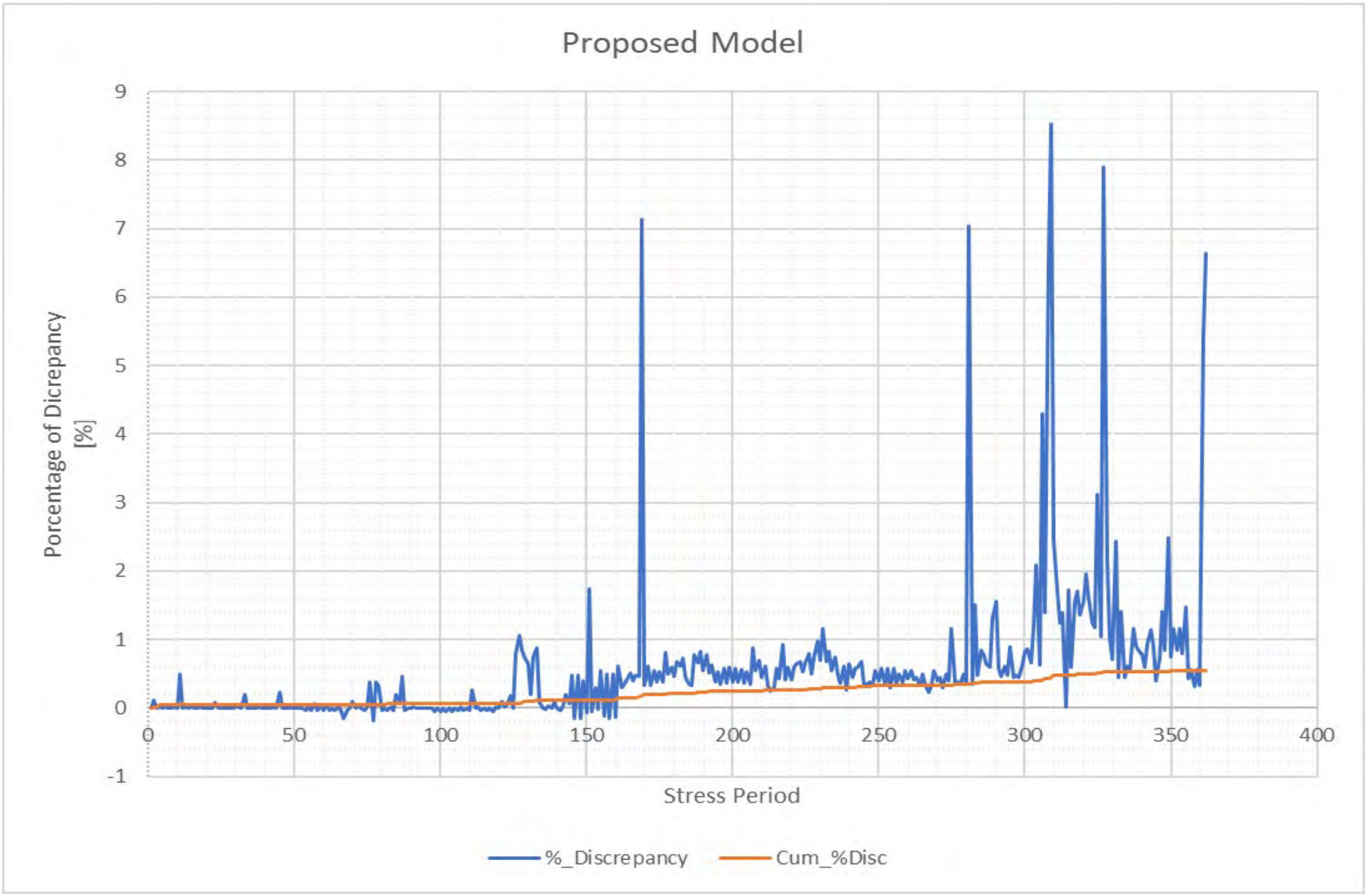
MATRIX MODIFIED MODEL PERCENT DISCREPANCY

HISTORICAL PERIOD

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

G2



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MATRIX MODIFIED MODEL PERCENT DISCREPANCY
HISTORICAL AND PREDICTIVE PERIODS

2021 Prescott AMA Model Modifications

ATTACHMENT LETTER:

G3

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APPENDIX E

Model Input and Output Files (Cloud Sharefile and USB Flash Drive)