BEAVER CREEK WATER CONTROL & IMPROVEMENT DISTRICT NO. 1
c/o Jones|Carter
150 Venture Drive, Suite 100
College Station, Texas 77845

July 20, 2020

Post Oak Savannah Groundwater
Conservation District
310 East Avenue C
P.O. Box 92
Milano, TX 76556

Re: Request of Exception to Spacing Requirements
Beaver Creek Water Control & Improvement District No. 1
Public Water System
J|C No. B0054-0004-00

Dear POSGCD Board of Directors:

The residents of Beaver Creek Subdivision in Burleson County, Texas have experienced years of inadequate water quality from private water wells within the subdivision. Many private water wells are shallow with insufficient spacing from On-Site Sewage Facilities (OSSFs) and are known to be contaminated with Coliform Bacteria. Beaver Creek Water Control and Improvement District No. 1 (BCWCID#1) was created in July 2008 by the Burleson County Commissioner's Court and voted to confirm its creation by the residents of Beaver Creek on November 4, 2008 with the sole purpose of constructing a new water system to serve the residents of Beaver Creek and provide a source of safe drinking water.

Since July 2011, BCWCID#1 has been working through the Texas Water Development Board (TWDB) in the Economically Distressed Areas Program (EDAP) to secure grant funding to construct a new water system to serve the residents of Beaver Creek. On February 25, 2014, it was determined by the Texas Department of State Health Services (TDSHS) that a Health Nuisance was present within BCWCID#1 due to the number of existing private water wells that were present with Coliform Bacteria. This Nuisance Determination made BCWCID#1 eligible for up to 100% grant funding through the TWDB EDAP Program for Design and Construction of the new water system. On September 15, 2014, BCWCID#1 was able to secure 95% grant funding through the TWDB EDAP Program for design of the water system. Design was completed and approved by the TWDB and Texas Commission on Environmental Quality (TCEQ) on December 3, 2015.

The proposed water system for BCWID#1 includes two water well sites within the District and will only serve the residents of Beaver Creek. No water will be taken out of the boundary of the District. Improvements include two 175 GPM water wells completed in the Sparta Aquifer, two 67,000-gallon bolted galvanized steel ground storage tanks, chlorination equipment, two 6,000-gallon hydro-pneumatic storage tanks, three booster pumps at each well site, and 121,440 linear feet of two-inch to eight-inch water mains with necessary fittings, gate valves, air release valves, and water services with meters.

Funding for the TWDB EDAP Program went several years without commitments from the Texas Legislature, so BCWCID#1 began to explore different funding mechanisms to construct the new water system, but available programs were not economically feasible for the District. In 2018, the Texas Legislature committed funding to the TWDB EDAP Program, and on March 6, 2019, BCWCID#1 closed on a 98% Grant of $6.9 million for construction of the new water system.

To date, the final step before BCWCID#1 can break ground on the proposed water system is to receive approval from the POSGCD for the two Permit Applications to Drill or Alter and Operate Non-Exempt Wells.

Purpose

The purpose of this letter is pursuant to POSGCD Rule 4.2, Exceptions to Spacing Requirements as stated in POSGCD Rule 4.1.

The POSGCD Rule 4.1.4 (spacing requirements for wells that will pump from the Yegua-Jackson, Trinity, Sparta, or Queen City Aquifers) requires a minimum spacing of 2.5 feet per GPM of well pumping capacity or 437.5 feet from the adjoining property line for the proposed BCWCID#1 wells producing 175 GPM in the Sparta Aquifer. Since the two well locations for BCWCID#1 will not meet this requirement, BCWCID#1 formally requests consideration of an exception to the POSGCD Rule 4.1.4 Required Spacing with a pumping capacity of 175 GPM. Below is an establishment of clear and convincing evidence to the POSGCD Board of Directors as to why BCWCID#1 should be permitted to drill two new wells closer than the spacing requirements of POSGCD Rule 4.1.4.

POSGCD Rules at Time of Design

When BCWCID#1 began design on the proposed water system project in 2014, the POSGCD rule for spacing requirements from the well to the property line of abutting land was one foot per GPM of well pumping capacity. This required BCWCID#1 to control 175 feet from the center of the proposed wells. In August of 2014 and May of 2015, Beaver Creek WCID#1 purchased lots 600 and 248 consecutively next to their existing properties to control the 175-foot radius from the center of the proposed wells and meet the requirement. Plans and specifications for the proposed water system were then approved by the TWDB through the EDAP program in December 2015, but as stated above adequate funding for the project was not available for BCWCID#1 to begin construction. In May of 2017, POSGCD Rule 4.1.4, Required Spacing was amended to 2.5 feet per GPM for wells within the Sparta Aquifer pumping at 175 GPM, increasing the required radius of BCWCID#1 control to 437.5 feet.

Amended Rule 4.1.4 increased the total number of properties that are within the radius that BCWCID#1 is required to control from 0 to 24 adjoining properties.

Contact with Property Owners

Following a meeting with POSGCD on March 3, 2020, BCWCID #1 was instructed that a Variance of Well Spacing will need to be signed and notarized by all property owners that are within 437.5 feet of the proposed wells. On April 16, 2020, certified letters requesting signatures for the Variance of Well Spacing were sent to the 24 property owner's addresses available on the Burleson County Appraisal District's website. Three letters came back undeliverable. Addresses for the three letters that came back undelivered were researched and were resent to different addresses.

On June 15, 2020, certified letters containing the Variance of Well Spacing were sent a second time to the addresses of the 14 property owners where there had been no response. Four additional signatures were received. Additionally, on June 15, 2020, BCWCID#1 employed a land agent to contact the property owners that have been non-responsive that reside outside of the District. To date, BCWCID#1 has received 14 signed POSGCD Variances of Well Spacing from residents within 437.5 feet of the proposed water wells. Attached as Attachment A is a status of the Variance Request of the 24 properties within 437.5 feet of the proposed wells. BCWCID#1 has made several attempts to contact the remaining unsigned property owners, but no additional contact has been successful.

Hydrological Study

RWH&A conducted analytical groundwater flow modeling using proprietary CAD-based software that utilizes the Theis equation to estimate the long-term (40-year) aquifer response associated with the two production scenarios:

Scenario 1. No Variance – production well instantaneous rates equal 100 gpm per well, and an annual production of 43 ac-ft/yr, per well.
Scenario 2. Variance – production well instantaneous rates equal 175 gpm per well, and an annual production of 76 ac-ft/yr, per well.

The simulation results estimate approximately 26 feet of artesian pressure decline as a result of Scenario 1 (No Variance), and 46 feet of artesian pressure decline as a result of Scenario 2 (Variance) within the proposed well bores after continuous 40-year long-term production. It is anticipated that the static levels in the Sparta aquifer are currently around 300 feet BGL, which means that the long-term artesian pressure, as a result of either modeled scenario, will rise more than 650 feet above the top of the aquifer after 40 years of pumping from the two new wells. Table 2 of the study shows the maximum drawdown results of both modeling scenario of each adjacent property to the proposed water wells. It is important to note that as a result of either scenario, the aquifer will remain completely full of water and water levels will rise more than 650 feet above the top of the aquifer within the study area over the next 40 years, and likely longer. The variance production will add approximately 12 feet of drawdown within the Sparta aquifer. The maximum anticipated drawdown after 40 years of continuous pumping at the adjacent properties ranges from about 16.2 feet to 17 feet as a result of no variance granted (Scenario 1/No Variance), and ranges from about 28.4 feet to 29.7 feet as a result of granting the variance (Scenario 2/Variance).

In summary, goundwater flow modeling results indicate that the proposed pumpage will not significantly affect the ability of neighboring users to produce groundwater from the deeper Sparta aquifer in the future, as the aquifer will remain completely full of water and water levels will rise more than 650 feet above the top of the aquifer within the study area over the next 40 years, and likely longer. In addition, the anticipated economic impacts to the adjacent landowners who construct a well to depths near 1,200 feet below ground level within the Sparta aquifer and produce from the Sparta aquifer, will only anticipate an additional decline of approximately 12 feet over the next 40 years as a result of the variance. And, by the POSGCD granting the variance, the economic impacts to adjacent landowners will be extremely minimal as the total dynamic head may only increase by about 12 feet, or likely less over the next 40 years as the model overpredicts drawdown. The hydrological study is provided as Attachment B.

Conclusion

BCWCID#1 has been working tirelessly for 12 years towards breaking ground on the proposed water system to provide a source of safe water for its residents. Clear and convincing evidence has been provided above in accordance with POSGCD Rule 4.2 and shows BCWCID#1 has made every attempt to satisfy the rules and should be permitted to drill two new wells closer than the spacing requirements of POSGCD Rule 4.1.4. The POSGCD rules on control were one foot per GPM at the time of design; BCWCID#1 has made every attempt to receive variances from well spacing from the 24 property owners within 437.5 feet of the proposed water wells; and a hydrological study has been performed showing the proposed wells will not significantly affect the ability of neighboring users to produce groundwater in the future.

Disapproval of this exception would limit BCWCID#1 to 100 GPM at each proposed well site and would require BCWCID#1 to construct two additional water wells within the District to achieve the total 350 GPM well capacity needed to serve the water system.

Additionally, disapproval would not only continue to delay the groundbreaking of this project, but deny BCWCID#1 the ability to provide a source of safe drinking water for its residents, deny BCWCID#1 the ability to utilize the 98% grant funding from the TWDB for construction of the water system, and ultimately kill the project. BCWCID#1 and the residents of Beaver Creek greatly appreciate your consideration in the approval of an exception and with your help look forward to breaking ground on the proposed water system soon.

Should you have any questions, please advise us accordingly.

Sincerely,

James Dever
President, Board of Directors

BPD/ebr
K:\B0054\B0054-0004-00 Beaver Creek WCID#1 Construction Phase\2 Design Phase\Reports\POSGCD Exception To Spacing Requirements\Letter To POSGCD Exception To Spacing Requirements 20200720.Docx
Enclosure

ATTACHEMENT A

ADJOINING PROPERTY OWNER VARIANCE REQUESTS

ADJOINING PROPERTY OWNER VARIANCE REQUEST
BEAVER CREEK WATER CONTROL & IMPROVEMENT DISTRCIT NO. 1
NEW WATER SYSTEM
J|C NO. B0054-0004-00
July 20, 2020

Mallard Well

No.	Property ID	Section Number	Lot Number	Owner Name	Mailing Address	Notes:
1	30613	2	247	Ammons, Tracy Lyn	1205 Mallard Drive #84 Caldwell, TX 77836	No response
2	30617	2	250	Blackstock, Rodney	1219 West 5th Street Freeport, TX 77541	Signature received
3	30618	2	251	Canterberry, Jennifer & Marshall	1343 Mallard Drive #82 Caldwell, TX 77836	Signature received
4	30776	2	389	Bartlett, Verna & Troy	2131 Lake Ridge #81 Caldwell, TX 77836	Signature received
5	30776	2	388	Bartlett, Verna & Troy	2131 Lake Ridge #81 Caldwell, TX 77836	Signature received
6	30766	2	387A	Bartlett, Verna & Troy	2131 Lake Ridge #81 Caldwell, TX 77836	Signature received
7	30767	2	387B	Bartlett, Verna & Troy	2131 Lake Ridge #81 Caldwell, TX 77836	Signature received
8	30418	1	83W	McCoy, Jimmy & Janice	1550 Deer Point Caldwell, TX 77836	Signature received
9	30414	1	82NW	McCoy, Jimmy & Janice	1550 Deer Point Caldwell, TX 77836	Signature received
10	30413	1	82SE	McCoy, Jimmy & Janice	1550 Deer Point Caldwell, TX 77836	Signature received

Teal Lake Water Well

No.	Property ID	Section Number	Lot Number	Owner Name	Mailing Address	Notes:
1	30906	3	483A	Porter, Ludessa	3559 Fresenius Rd Silsbee, TX 77656	No response
2	30883	3	468B	Boyd, Steven	1809 Cheryl Dr Caldwell, TX 77836	Signature received
3	30884	3	468C	Keimross 401(k) Profit Sharing Plan	603 Robinhood Brenham, TX 77833	No response
4	30880	3	467A	Dotson, Jay	PO Box 334 Wellborn, TX 77881	Signature received
5	30881	3	467B	Cervera, Jose	3010 Candy Lane Bryan, TX 77803	Signature received
6	30877	3	466A	Laws, Otis	2323 Clear Lake City Blvd Suite 180 #266 Houston, TX 77062	No response
7	31057	3	599	Gonzalez, Amelia	1902 Palasota Bryan, TX 77803	No response
8	31022	3	572	Storm, Mical & Dawn	2232 S Market Brenham, TX 77833	No response
9	31024	3	573B	Pierre, Shawn	1550 Crescent Point Parkway #8310 College Station, TX 77845	Signature received
10	31023	3	573A	McMillan, Steve	128 FM 2550 Huntsville, TX 77320	No response
11	31026	3	574B	Sabastian Flores and Maura Munoz	1103 Commerce St. #3 Bryan, TX 77803	No response
12	31025	3	574	Cruz, Jose	113 Lynn Drive TRLR 18 Bryan, TX 77801	Letter came back undelivered; Resent to different address; No response
13	31126	3	655	Llamas, Silvia	PO Box 335 Snook, TX 77878	No response
14	31124	3	654	Abrey, John	342 Teal Lake Drive Caldwell, TX 77836	Signature Received

ATTACHMENT B

HYDROLOGICAL STUDY

R W HARDEN &ASSOCIATES INC
GROUNDWATER RESOURCE PROFESSIONALS
9009 Mountain Ridge Dr • Suite 100 • Austin Texas 78759 • ph (512) 345-2379 • fax (512) 338-9372

TECHNICAL MEMORANDUM

Groundwater Modeling and Hydrogeologic Reporting

Date: July 20, 2020

To: James Dever, President, Beaver Creek WCID No. 1

From: Liz Ferry, P.G., R. W. Harden & Associates, Inc.

CC: Brian Dobiyanski, P.E., Jones | Carter

Introduction

At the request and direction of Jones | Carter (J|C) and on behalf of Beaver Creek Water Control and Improvement District No. 1 (WCID No. 1), R. W. Harden & Associates, Inc. (RWH&A) conducted an evaluation of the potential hydrologic impacts to adjacent properties resulting from the proposed long-term production from two planned public supply wells located in Burleson County, Texas. RWH&A understands that the proposed wells are reportedly to be completed within the Sparta aquifer between depths of approximately 1,000 to 1,200 feet below ground level (BGL) and produce an instantaneous rate of 175 gallons per minute (gpm) per well, or a total annual yield of 76 acre-feet per year (ac-ft/yr) per well. The Post Oak Savanah Groundwater Conservation District (POSGCD or District) regulates the spacing and production of groundwater from wells within Burleson County, and therefore, Beaver Creek WCID No. 1 is required to submit the appropriate documentation to the POSGCD for approval of use. According to the POSGCD Rule 4.1.4, the wells need to be spaced a minimum of 5 feet per 175 gpm of production capacity from any existing well in the same formation (Sparta aquifer), which is a total of 875 feet, and 2.5 feet per 175 gpm from the adjacent property boundary, which equals a distance of 437.5 feet. J|C provided the two proposed well locations and adjoining properties, which indicate the wells are less than the 437.5 feet and do not meet POSGCD Rule 4.1.4 spacing between adjoining properties. Therefore, according to J|C, the POSGCD recommended that Beaver Creek WCID No. 1 provide a hydrogeologic report documenting the potential impacts from the proposed production to aid in obtaining an exception to the spacing requirements from the POSGCD. This technical memorandum is intended to satisfy the District's request.

For this work, RWH&A compiled and reviewed available information pertaining to the proposed well locations, proposed well design and production intervals, the local geologic structure and current static water levels, and other applicable information. RWH&A reviewed current POSGCD rules as they apply to well spacing for the Sparta aquifer, and requirements for requesting an exception to the well spacing rules. In addition, RWH&A, Gary Westbrook (General Manager of POSGCD), and Steve Young, P.E., P.G. (consulting hydrogeologist for POSGCD) held a conference call on June 30th, 2020 to discuss modeling parameters specific to this project. As a result of the June 30th conference call, POSGCD recommended a model simulation of the proposed pumpage for the duration of the permit term, which is 40 years utilizing hydraulic parameters as provided within the Texas Water Development Board (TWDB) approved and updated Groundwater Availability Model (GAM) for the Central Carrizo-Wilcox, Queen City, and Sparta aquifers. On July 16, 2020, a second conference call was conducted in which the POSGCD

requested a second model simulation be performed that included the production amount if the variance was not granted, which decreases the instantaneous pumping rate to 100 gpm, or an average annual yield of 43 ac-ft/yr, per well. In addition, the POSGCD requested a tabulation of the drawdown results at each property that abuts the proposed well site properties, which is provided herein. Both model scenarios are discussed, and the results presented, below.

Groundwater Modeling

RWH&A conducted analytical groundwater flow modeling using proprietary CAD-based software that utilizes the Theis equation to estimate the long-term (40-year) aquifer response associated with the two production scenarios:

Scenario 1. No Variance – production well instantaneous rates equal 100 gpm per well, and an annual production of 43 ac-ft/yr, per well.
Scenario 2. Variance – production well instantaneous rates equal 175 gpm per well, and an annual production of 76 ac-ft/yr, per well.

The hydraulic parameters utilized for modeling purposes were obtained from the updated Central Carrizo-Wilcox, Queen City and Sparta Groundwater Availability Model (GAM). Specifically, the aquifer transmissivity and storage parameters were obtained from Node 24531, and Node 24723 of Layer 3 of the GAM, which are summarized in Table 1.

Table 1. Aquifer Parameters from the Layer 3 of the GAM

Well ID	*Cell Node (Row,Column)*	*Hydraulic Conductivity*	*Thickness*	*Transmissivity*	*Storage Coefficient*
Well No. 1	24531 (R56,C131)	20 gal/day/ft^2	335 feet	6,700 gal/day/ft	$5.5x10^{-7}$
Well No. 2	24723 (R57,C132)	17.5 gal/day/ft^2	345 feet	6,000 gal/day/ft	$5.18x10^{-7}$

Note: hydraulic conductivity is presented in gallons per day per square foot (gal/day/ft^2), and transmissivity is presented in gallons per day per foot. Storage coefficient is unitless.

For modeling purposes, RWH&A utilized the average transmissivity and storage coefficient between the two cells, which equals 6,300 gal/day/ft and $5.3x10^{-7}$, respectively. The total model run time simulated continuous production for 40 years, or 14,600 days.

Groundwater Modeling Results

The simulation results estimate approximately 26 feet of artesian pressure decline as a result of Scenario 1 (No Variance), and 46 feet of artesian pressure decline as a result of Scenario 2 (Variance) within the proposed well bores after continuous 40-year long-term production. It is anticipated that the static levels in the Sparta aquifer are currently around 300 feet BGL, which means that the long-term artesian pressure, as a result of either modeled scenario, will rise more than 650 feet above the top of the aquifer after 40 years of pumping from the two new wells. Figures 1-6 illustrate drawdown contours as a result of the simulated artesian pressure decline after 40 years of pumping the permitted production of Scenario 1 (No Variance) and Scenario 2 (Variance) from the two new wells within a one-half (½) mile radius of the proposed well sites.

Figures 1 and 2 illustrate that after the 40 years of production from the two proposed well sites, the predicted artesian pressure declines in the Sparta aquifer are less than 14 feet and 24 feet at a ½ mile from the well sites, assuming no variance was granted and a variance is granted, respectively. Figures 3 and 4 illustrate the modeling drawdown results as a result of Scenario 1 (No Variance) and Scenario 2 (Variance) at the Teal Lake properties. Figures 5 and 6 illustrate the modeling drawdown results as a result of Scenario 1 (No Variance) and Scenario 2 (Variance) at the Mallard properties. Table 2 tabulates the maximum drawdown results of each modeling scenario at each adjacent property. It is important to note that as a result of either scenario, the aquifer will remain completely full of water and water levels will rise more than 650 feet above the top of the aquifer within the study area over the next 40 years, and likely longer.

Table 2. Drawdown Results within the Sparta Aquifer at Adjacent Properties

Well Location	*Parcel ID*	*Drawdown (feet) Scenario 1 (No Variance)*	*Drawdown (feet) Scenario 2 (Variance)*	*Owner Name*
Teal Lake Drive	30906	16.4	28.7	Porter, Ludessa
	30883	16.3	28.6	Boyd, Steven
	30884	16.7	29.3	Keimross 401(k) Profit Sharing Plan
	30880	16.7	29.3	Dotson, Jay
	30881	16.6	29.1	Cervera, Jose
	30877	16.4	28.8	Laws, Otis
	31057	16.8	29.5	Gonzalez, Amelia
	31022	16.9	29.5	Storm, Mical & Dawn
	31024	16.9	29.5	Pierre, Shawn
	31023	16.8	29.4	McMillan, Steve
	31026	16.6	29.0	Sabastian Flores and Maura Munoz
	31025	16.3	28.6	Cruz, Jose
	31126	16.5	28.9	Llamas, Silvia
Mallard Drive	31124	16.6	29.1	Abrey, John
	30613	17.0	29.7	Ammons, Tracy Lyn
	30617	16.8	29.3	Blackstock, Rodney
	30618	16.2	28.4	Canterberry, Jennifer & Marshall
	30776 North	16.7	29.3	Bartlett, Verna & Troy
	30776 South	16.3	28.6	Bartlett, Verna & Troy
	30766	16.6	29.0	Bartlett, Verna & Troy
	30767	16.3	28.6	Bartlett, Verna & Troy
	30418	16.5	28.8	McCoy, Jimmy & Janice
	30414	16.7	29.3	McCoy, Jimmy & Janice

In summary, the variance production will add approximately 12 feet of drawdown within the Sparta aquifer. The maximum anticipated drawdown after 40 years of continuous pumping at the adjacent properties ranges from about 16.2 feet to 17 feet as a result of no variance granted (Scenario 1/No Variance), and ranges from about 28.4 feet to 29.7 feet as a result of granting the variance (Scenario 2/Variance). **However, it must**

be noted that the Theis equation assumes no recharge and/or inter-aquifer leakage from overlying or underlying formations. Consequently, the simulation results likely overpredict the impacts associated with production from the proposed well sites.

In addition to analytical modeling, RWH&A conducted numerical modeling to evaluate the regional aquifer response to pumpage using the updated Central Carrizo-Wilcox, Queen City and Sparta GAM. Specifically, the pumpage inputs assigned to the most-recent and approved Desired Future Condition - Modeled Available Groundwater (DFC/MAG) simulation (PS12) employed by GMA-12 to assess the impacts as result of Beaver Creek WCID No. 1's proposed production. No modifications to the GAM other than the input of the proposed pumpage in Scenario 1 and Scenario 2 was included within the model cells of Layer 3 (Sparta) for pumpage periods from 2020 to 2070. The results of this simulation indicate that approximately 6 feet and 15 feet of drawdown as a result of the proposed production without a variance (Scenario 1) and with a variance (Scenario 2) will occur, respectively, within the one-mile grid cell of the two proposed production well sites after 50 years of production.

On July 14, 2020, RWH&A obtained locations of registered and permitted wells from the POSGCD within Burleson County, which provides locations of wells within a one-half mile radius of the proposed well sites. In addition, RWH&A has obtained the most recent well reports from the TWDB's database. The information from the TWDB coupled with the information recently provided from POSGCD indicate that there are no reported wells completed in the Sparta aquifer within an 875-foot radius of each well site, and therefore a well-specific drawdown evaluation was not needed. Table 3 tabulates the wells reported within a ½ mile radius of both properties along with the reported well depths.

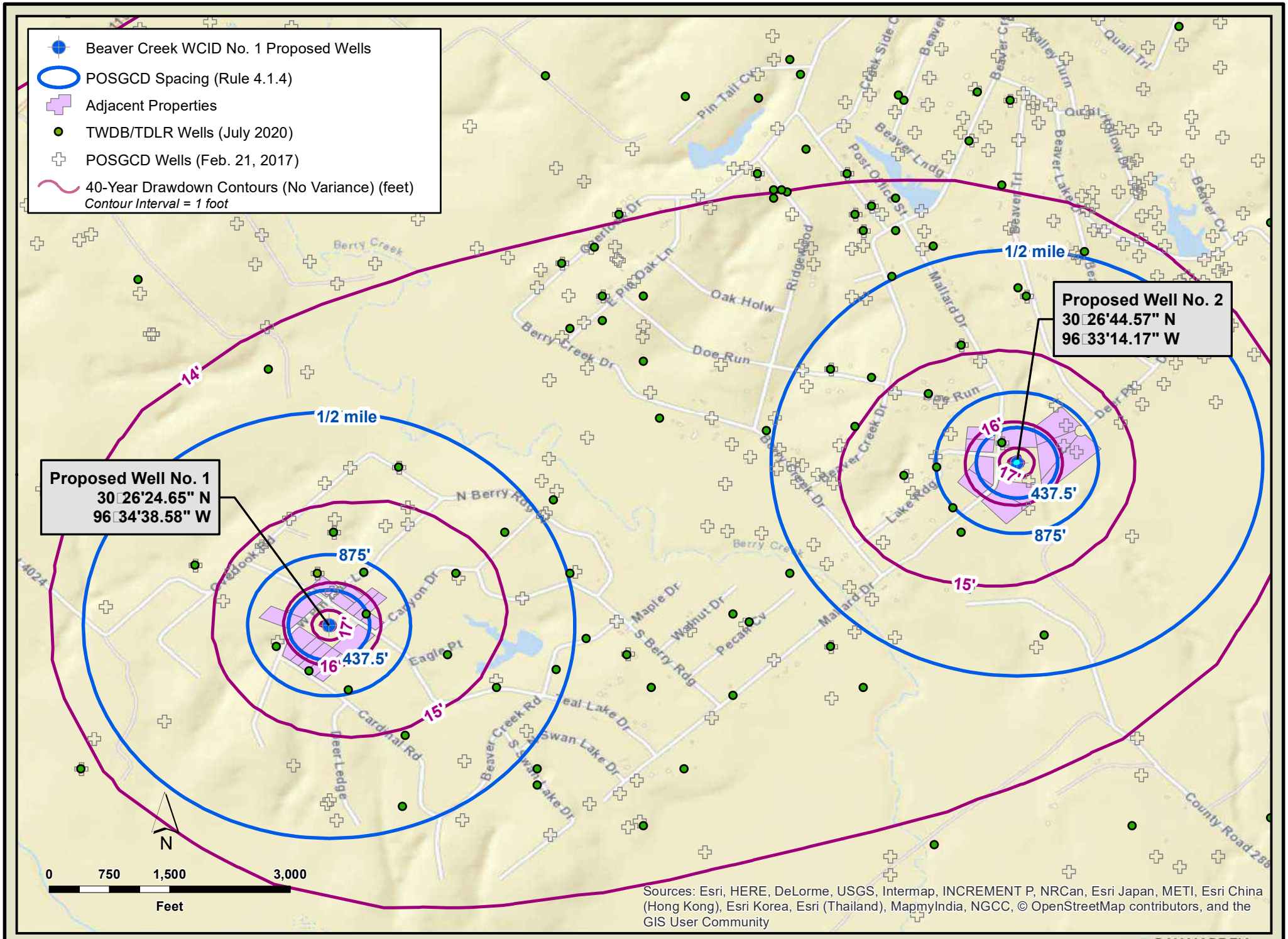
Conclusions

Goundwater flow modeling results indicate that the proposed pumpage will not significantly affect the ability of neighboring users to produce groundwater from the deeper Sparta aquifer in the future, as the aquifer will remain completely full of water and water levels will rise more than 650 feet above the top of the aquifer within the study area over the next 40 years, and likely longer. In addition, the anticipated economic impacts to the adjacent landowners who construct a well to depths near 1,200 feet below ground level within the Sparta aquifer and produce from the Sparta aquifer, will only anticipate an additional decline of approximately 12 feet over the next 40 years as a result of the variance. And, by the POSGCD granting the variance, the economic impacts to adjacent landowners will be extremely minimal as the total dynamic head may only increase by about 12 feet, or likely less over the next 40 years as the model overpredicts drawdown.

The seal appearing on this document was authorized by Elizabeth Ferry, P.G. 11011 on July 20, 2020. R.W. Harden & Associates, Inc. TBPG Firm No. 50033.

Sincerely,

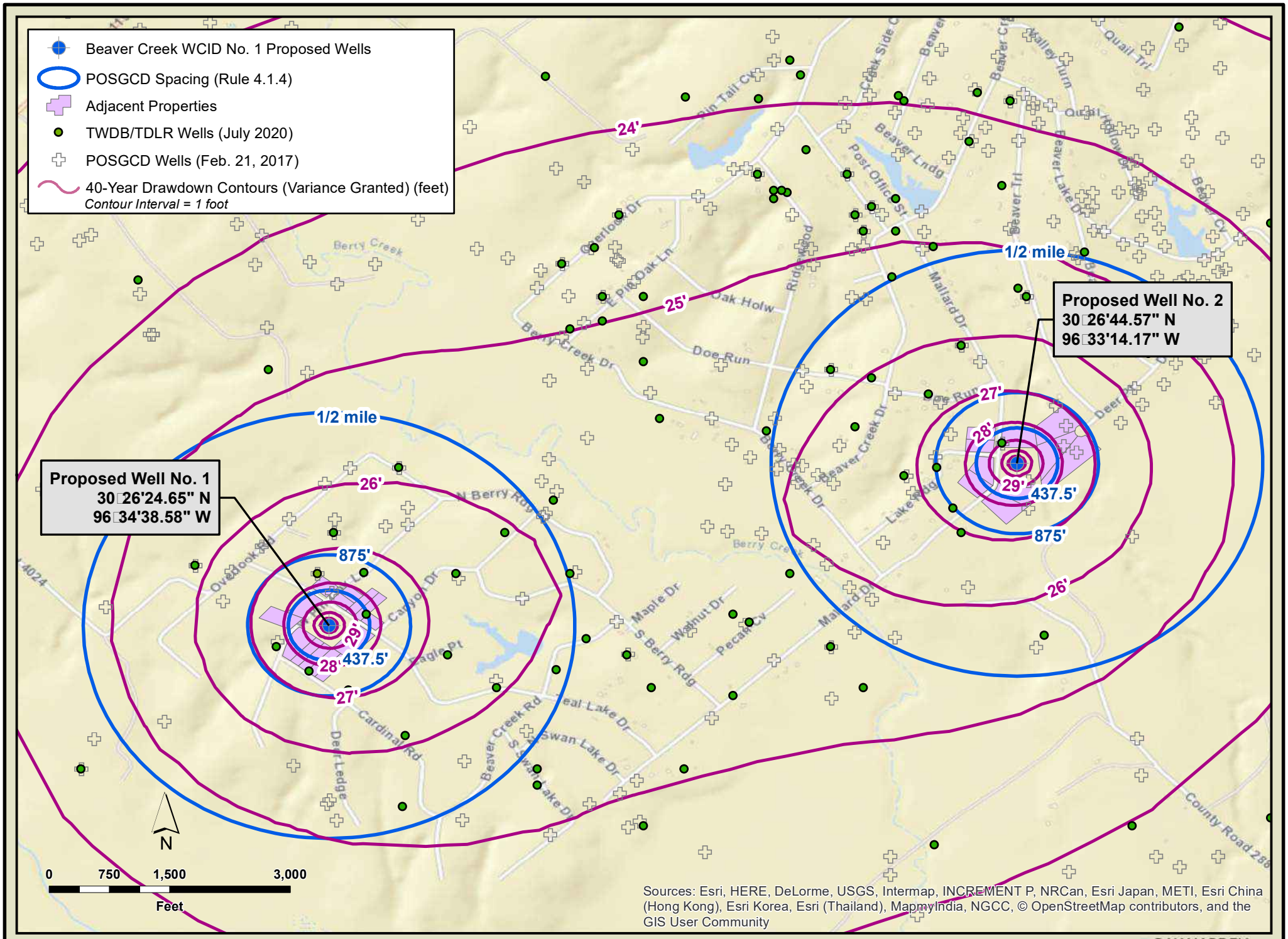
Elizabeth Ferry, P.G.
R. W. Harden & Associates, Inc.



Beaver Creek WCID No. 1

Figure 1. Spacing and Modeling Results (No Variance)

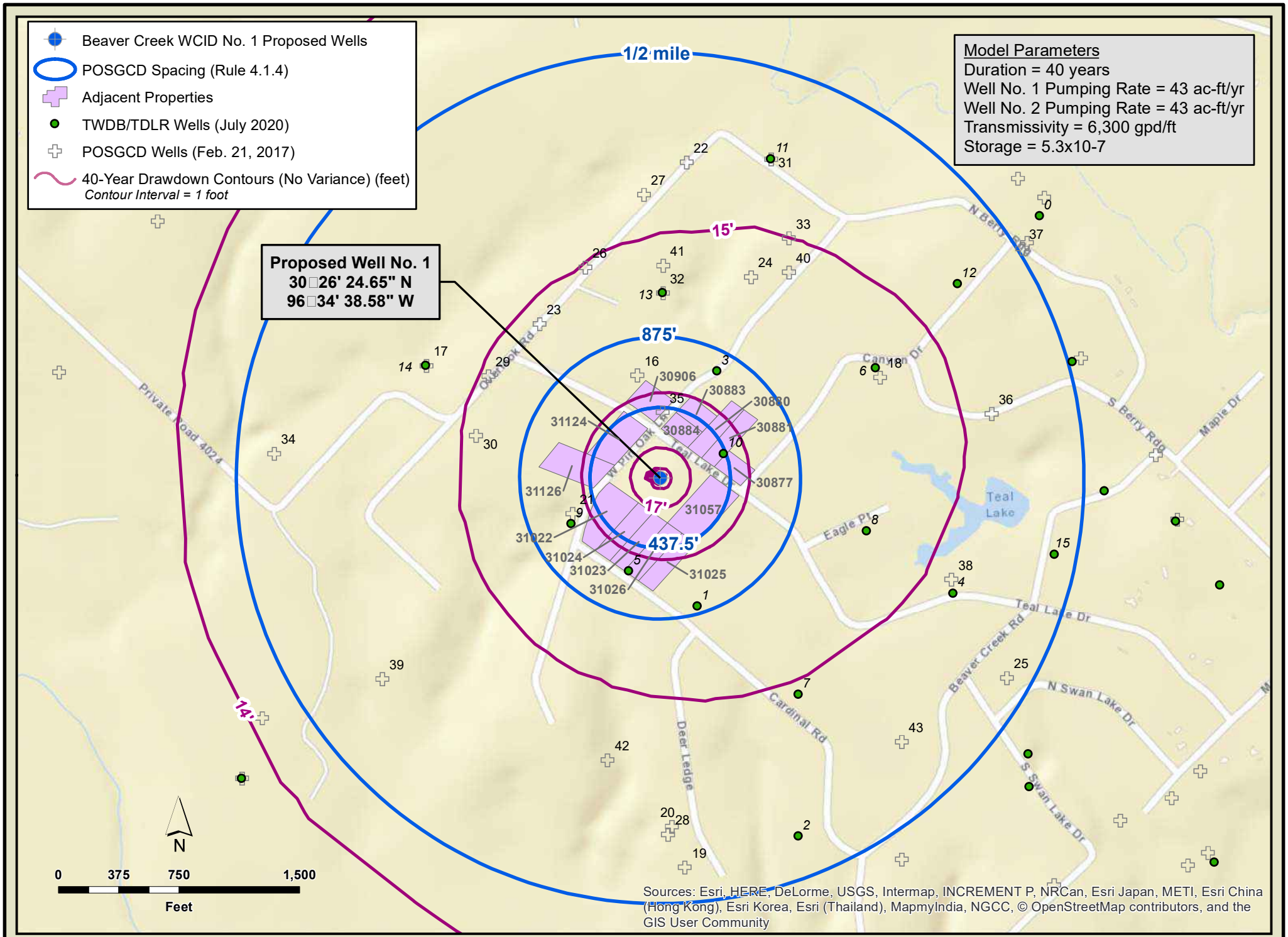
R W HARDEN & ASSOCIATES INC
GROUNDWATER RESOURCE PROFESSIONALS



Beaver Creek WCID No. 1

Figure 2. Spacing and Modeling Results (Variance Granted)

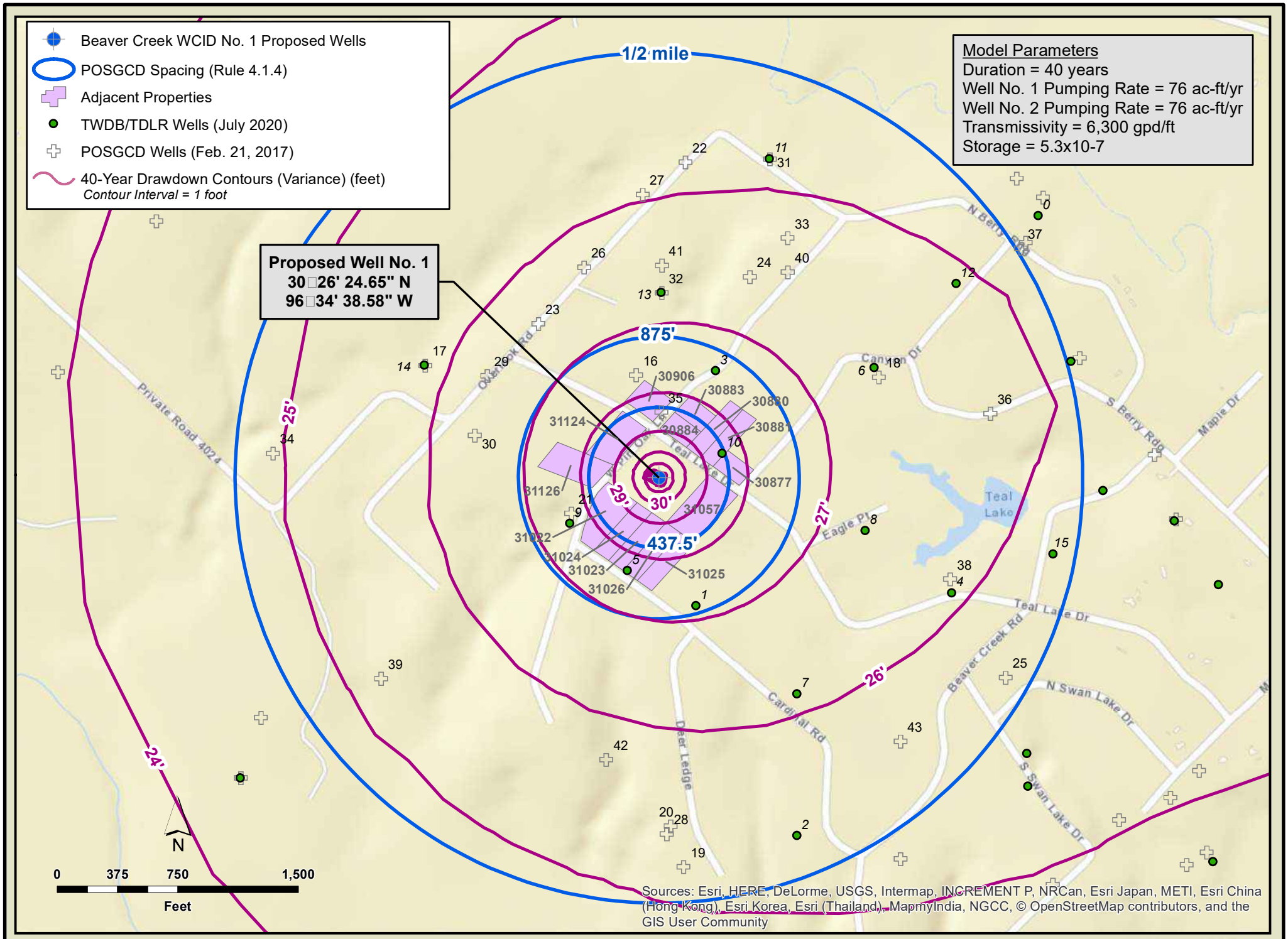
R W HARDEN &ASSOCIATES INC
GROUNDWATER RESOURCE PROFESSIONALS



Beaver Creek WCID No. 1

Figure 3. Proposed Teal Lake Well and Model Results (No Variance)

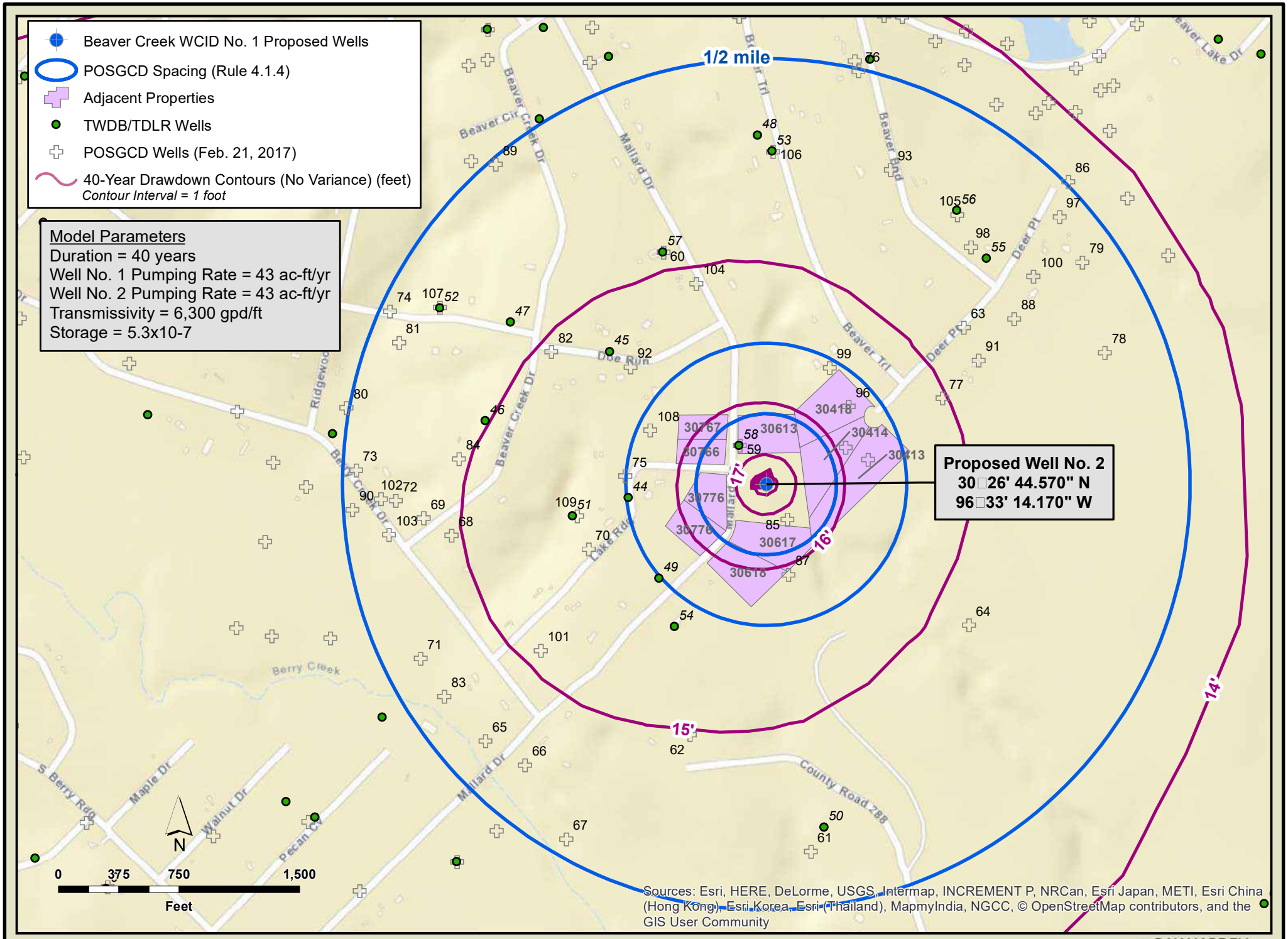
R W HARDEN & ASSOCIATES INC
GROUNDWATER RESOURCE PROFESSIONALS



Beaver Creek WCID No. 1

Figure 4. Proposed Teal Lake Well and Model Results (Variance)

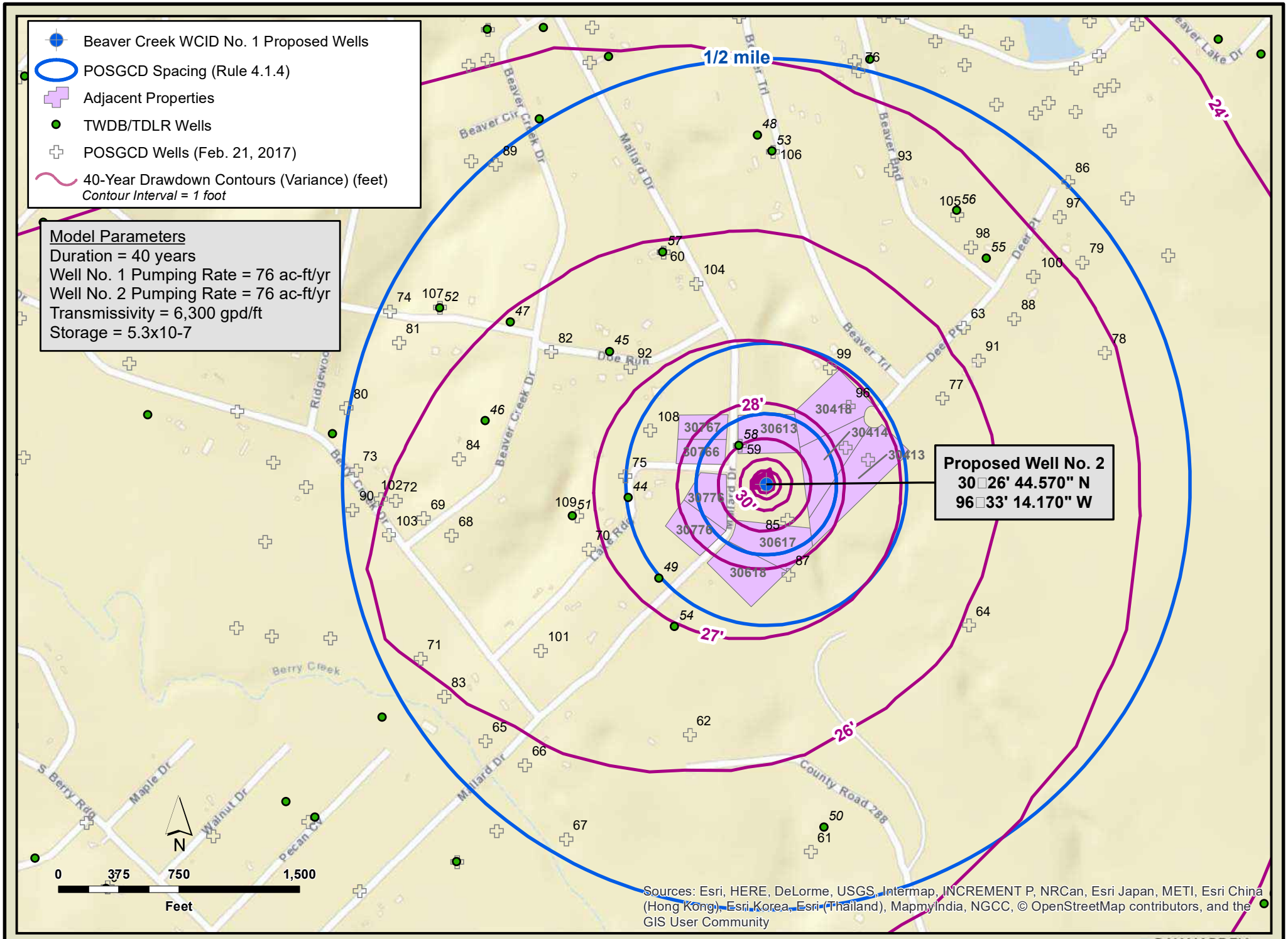
R W HARDEN &ASSOCIATES INC



Beaver Creek WCID No. 1

Figure 5. Proposed Mallard Drive Well and Model Results (No Variance)

R W HARDEN &ASSOCIATES INC
GROUNDWATER RESOURCE PROFESSIONALS



Beaver Creek WCID No. 1

Figure 6. Proposed Mallard Drive Well and Model Results (Variance)

R W HARDEN &ASSOCIATES INC
GROUNDWATER RESOURCE PROFESSIONALS

Table 3. Reported Well Locations within 1/2 Mile Radius of the Proposed Well Sites

Location	Source	Map Label ID	POSGCD Object ID	POSGCD WID	Well Report No.	Proposed Use	Owner Name	Well Address	Latitude	Longitude	Borehole Depth, Feet
Teal Lake Drive	TWDB Database July 2020	1			545468	Domestic	Joe Thomas	589 Cardinal Rd, Caldwell, 77836	30.437972	-96.576722	560
		2			541171	Domestic	Karla Rodorte	884 Cardinal Rd., Caldwell, 77836	30.434	-96.574867	165
		3			541043	Domestic	Clayton Homes	2791 Canyon Dr., Caldwell, 77836	30.441972	-96.576194	340
		4			536634	Domestic	David Latham - Burdick	799 Teal Lake Drive, Caldwell, 77836	30.438056	-96.571667	135
		5			534440	Domestic	Sebastian Flores	481 Cardinal Rd., Caldwell, 77836	30.438611	-96.578056	195
		6			514483	Domestic	Joe Gutierrez	2719 Canyon Drive, Caldwell, 77836	30.441944	-96.573056	108
		7			488464	Domestic	Cecilly E. Martinez	748 Cardinal Road, Caldwell, 77836	30.436419	-96.574783	550
		8			408374	Domestic	Marvin B James	763 Berry Ridge #252, Caldwell, 77836	30.439167	-96.573333	140
		9			381696	Domestic	Carina Lopex	3102 West Pin Oak Lane, Caldwell, 77836	30.439445	-96.579167	400
		10			222056	Domestic	Ora Baker	465 Teal Lake Dr., Caldwell, 77836	30.440556	-96.576111	200
		11			125460	Domestic	Irvin Huckaby	3 3/4 miles North of Lyons	30.445556	-96.575	176
		12			70840	Domestic	Willie McIver	4 Miles North of Lyons	30.443334	-96.571389	600
		13			69704	Domestic	Larry A. WEEKS	2807 Overlook Drive, Caldwell, 77836	30.443334	-96.577222	280
		14			31501	Domestic	MOSES DAVILIA	4 MILES NW OF, LYONS	30.442222	-96.581944	570
		15			526085	Domestic	Angelica Fierro	2805 Beaver Creek, Caldwell, 77836	30.438667	-96.569639	340
	POSGCD Feb. 21, 2017	16	651	660	5936501	NOT-APPL			30.441944	-96.577777	
		17	1299	1339			MOSES DAVILIA		30.44222	-96.58194	
		18	3582	3655			Glynn Luster		30.44178	-96.57298	570
		19	3603	3676			Dela Holiman		30.43353	-96.57714	320
		20	3604	3677			Clarence Lacaze		30.43423	-96.57737	155
		21	3608	3681			Darrell Smith		30.43962	-96.57914	95
		22	3611	3684			Dixie Myer		30.44555	-96.57667	610
		23	3496	3569			All American Homes		30.44287	-96.57968	364
		24	3497	3570			David Welch		30.44356	-96.57547	305
		25	3498	3571			Sharon Conerway		30.43659	-96.57066	240
		26	3500	3573			Starward Realty		30.44381	-96.57874	240
		27	3502	3575			Andy McClurkan		30.44502	-96.57754	170
		28	3505	3578			Charlie Ellis		30.4341	-96.57745	140
		29	3507	3580			Tim George		30.44201	-96.58072	160
		30	6239	6380			David G. Norris		30.441	-96.581	120
		31	6589	6756			Irvin Huckaby		30.44555556	-96.575	
		32	6854	7047			Larry A. Weeks		30.44333333	-96.57722222	
		33	7003	7199			Mary Melissa Brown		30.4442	-96.5747	280
		34	7034	7232			Milton M. Paul		30.4408	-96.585	
		35	7082	7287			Paul E. Carpenter		30.4413	-96.5773	
		36	7196	7416			Rodger L. Lewis		30.4411	-96.5708	
		37	7463	7723			Albert L. Vavra		30.4439	-96.5701	
		38	7470	7737			Crow Raymond Lawson		30.4383	-96.5717	
		39	7472	7739			Vernon E. Wright		30.4369	-96.583	
		40	7475	7742			Tate Childress		30.443619	-96.574716	
		41	7476	7743			Tate Childress		30.4438	-96.5772	
		42	7488	7756			Peggy J. White		30.4354	-96.5786	
		43	7833	8137			Winston J. & Mary E. Scott		30.43555556	-96.57277778	

Table 3. Reported Well Locations within 1/2 Mile Radius of the Proposed Well Sites

Location	Source	Map Label ID	POSGCD Object ID	POSGCD WID	Well Report No.	Proposed Use	Owner Name	Well Address	Latitude	Longitude	Borehole Depth, Feet
Mallard Drive	TWDB Database July 2020	44			522595	Domestic	Karen Lawrence	2146 Lake Ridge, Caldwell, 77836	30.445556	-96.556667	280
		45			495182	Domestic	Charlotte Gonzales	995 Doe Run #241, Caldwell, 77836	30.448056	-96.556944	240
		46			483138	Domestic	Rodney Ripple	Beaver Creek Drive, Caldwell, 77836	30.446944	-96.559444	134
		47			480009	Domestic	Aurelio Navarro	839 Doe Run Street, Caldwell, 77836	30.448611	-96.558889	155
		48			458623	Domestic	Fernando Serrato	1748 Beaver Trail, Caldwell, 77836	30.451667	-96.553889	235
		49			445981	Domestic	Esmeralda Esparza	1432 Mallard Dr, Caldwell, 77836	30.444167	-96.556111	256
		50			425393	Domestic	Vergill Tyra	1359 Mallard Dr, Caldwell	30.439833	-96.553	309
		51			348386	Domestic	Richard Mc MURRY	960 Doe Run, Caldwell, 77836	30.445278	-96.557778	270
		52			301887	Domestic	Linda R. Garcia	1146 Beaver Bend Lot 85, Caldwell, 77836	30.448889	-96.560278	320
		53			255658	Domestic	Ricardo Giaccio	Beaver Trail, Snook	30.451389	-96.553612	220
		54			222079	Domestic	Andre Howard	1431Mallard Drive, Caldwell, 77836	30.443334	-96.555834	218
		55			189504	Domestic	Scott, Larry	6 mi., Lyons, 2 mi. N of FM 60, Caldwell	30.449445	-96.549445	170
		56			84316	Domestic	Julian Arguello	1047 Beaver Creek Dr., Caldwell, 77836	30.450278	-96.550001	280
		57			27848	Domestic	Shannon Ramirez	Beaver Creek Subdivision, Caldwell, 77836	30.449722	-96.555834	260
		58			12974	Domestic	Willy Benavidez	247 Mallard - Beaver Creek, Caldwell, 77836	30.446389	-96.554445	220
	POSGCD Feb. 21, 2017	59	1254	1294			Willy Benavidez		30.44639	-96.55444	220
		60	1289	1329			Shannon Ramirez		30.44972	-96.55583	260
		61	3538	3611			Cam LaPee		30.43943	-96.55329	150
		62	3539	3612			Mike Priest		30.44149	-96.55561	280
		63	3540	3613			Dale Jozwiak		30.44828	-96.54994	320
		64	3545	3618			Jonny Welch		30.44321	-96.55002	200
		65	3548	3621			David Janac		30.44149	-96.55965	260
		66	3549	3622			Bill Hicks		30.44106	-96.55888	272
		67	3560	3633			W.J. Rosenberger		30.43977	-96.55811	295
		68	3563	3636			Bob Minick		30.44501	-96.56019	370
		69	3564	3637			Bob Minick		30.44532	-96.56073	355
		70	3565	3638			Edward Ross		30.4447	-96.55749	312
		71	3567	3640			S.C. Kirby		30.44293	-96.56088	575
		72	3576	3649			Mike Murray		30.44563	-96.56127	340
		73	3577	3650			Emil W. Freed		30.44617	-96.56204	160
		74	3584	3657			Bill Bennett		30.44886	-96.56127	166
		75	3597	3670			Dorothy Voshalike		30.44593	-96.55672	280
		76	3598	3671			Neal Tyra		30.45271	-96.55187	220
		77	3599	3672			Rick Fazzio		30.44709	-96.55041	300
		78	3600	3673			United Oill & Minerals		30.44778	-96.54717	530
		79	3614	3687			James Renshaw		30.44933	-96.54756	260
		80	3615	3688			Randy Birdwell		30.44724	-96.56219	120
		81	3617	3690			Leonard Hotcaveg		30.44832	-96.56111	297
		82	3618	3691			Chester Bagget		30.44809	-96.55811	280
		83	3489	3562			Don Thurman		30.44227	-96.56043	138
		84	3490	3563			Emmett Palmer		30.44631	-96.56	200
		85	3514	3587			David Autury		30.4451	-96.55355	240
		86	3623	3696			Franklin Faust		30.45071	-96.54779	240
		87	3624	3697			Connie Walker		30.44416	-96.55356	223
		88	3625	3698			Virgil W. Lytle		30.4484	-96.54894	180
		89	5680	5764			Bobby Crosthwait		30.45131	-96.55909	362
		90	6004	6125			Alejandro Bosquez		30.4455	-96.56213333	
		91	6133	6259			Bryan Kent Pound		30.44771667	-96.54966667	
		92	6243	6384			David Greenwood		30.44778333	-96.55655	
		93	6477	6636			Gary Wayne Kovar, Jr.		30.451009	-96.551288	
		94	6653	6830			James Royce Wood		30.4463	-96.55235	
		95	6654	6831			James Royce Wood		30.44608333	-96.55191667	
		96	6707	6887			Jimmy McCoy		30.447	-96.55226667	
		97	6857	7051			Larry L. Scott		30.45011667	-96.54798333	
		98	6992	7188			Martha Scott		30.44965	-96.54975	
		99	7205	7426			Ronald R. Vann		30.44766667	-96.55261667	
		100	7270	7496			Sherman L. Bartlett		30.44911667	-96.54853333	
		101	7403	7655			Vodney C. Miller		30.443	-96.5585	
		102	7482	7749			Rosa R. Figuerosa		30.445673	-96.561566	
		103	7588	7861			Johnny Gonzales		30.445055	-96.561433	
		104	7857	8167			Rita Kay Buck		30.449171	-96.555204	
		105	7979	8299			Antonio Pineda		30.4502	-96.55	125
		106	8539	8998			Ricardo J. Giaccio		30.45138	-96.55361	220
		107	8646	9136			Linda R. Garcia		30.4489	-96.56028	320
		108	8707	9211			Emitt Edwin Walker		30.4467	-96.5562	
		109	8759	9274			Richard O. McMurry		30.44527	-96.5577	270

*Notes - All cells as reported by the TWDB or POSGCD. An empty cell = no data was reported.