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September 5, 2024

Penny Hanson, General Manager
Neches and Trinity Valleys GCD
501 Devereaux Street
Jacksonville, TX 75766

RE: Hydrogeological Report for the Neches and Trinity Valleys GCD
Middle Wilcox Wellfield – Bluebonnet Property, Henderson County, TX

Dear Ms. Hanson,

LRE Water ("LRE") is pleased to submit this Hydrogeological Report to the Neches and Trinity Valleys Groundwater Conservation District ("NTVGCD" or District) on behalf of Pine Bliss, LLC. The purpose of this Hydrogeological Report is to assess the potential impacts associated with a proposed Middle Wilcox wellfield on an approximately 4,112-acre property (herein referred to as the "Bluebonnet Property) in Henderson County, Texas. According to District Rule 5.4(k), an applicant requesting to drill and operate a proposed new well or well system with a daily maximum capacity of more than 2 million gallons or requests to modify to increase production or production capacity of a non-exempt well with an outside casing diameter greater than 10 inches is required to submit a Hydrogeological Report with the permit application. This Hydrogeologic Report addresses the area of influence, estimated drawdown, recovery time, relation of proposed pumping to the modeled available groundwater (MAG) and the desired future conditions (DFCs), and water usage for the proposed production as it relates to the current Regional Plan. The information provided herein is intended to supplement the Groundwater Availability Study prepared by LRE for Pine Bliss, LLC, dated June 5, 2024, and to address deficiencies in the permit application, as noted in the District's letter to Pine Bliss, LLC, dated August 8, 2024.

The proposed wellfield will consist of 11 wells producing a total combined production capacity of 6,350 gallons per minute (gpm), or 10,270 acre-feet per year (ac-ft/yr) from the Middle Wilcox Aquifer of the Carrizo-Wilcox Aquifer System. The intended use for which production is requested includes all beneficial purposes as those terms are defined in Section 36.001(9) of the Texas Water Code and NTVGCD Rule 1(c). The water produced from this wellfield is planned to be used within Regional Water Planning Areas C, G, H, K, and/or L.

Background

For this work, LRE compiled and reviewed publicly available information pertaining to the geologic structure, lithology, and hydraulic properties of the Middle Wilcox Aquifer of the Carrizo-Wilcox Aquifer System beneath the Bluebonnet Property. This included a review of geologic and hydrogeologic data from published groundwater studies, geologic maps, state well reports, well drilling reports, and other applicable information from published literature. Data sources included the Texas Commission on Environmental Quality (TCEQ), the Texas Water Development Board (TWDB) Groundwater Database, the Submitted Drillers Report (SDR) Database, and LRE files. LRE's literature review included the TWDB Report No. 150 ("R-150") "Ground-Water Conditions in Anderson, Cherokee, Freestone, and Henderson Counties, Texas by Guyton & Associates (1972) and TWDB Report No. 327 ("R-327") "Evaluation of Ground Water Resources in the Vicinity of the Cities of Henderson, Jacksonville, Kilgore, Lufkin, Nacogdoches, Rusk, and Tyler in East Texas" by Preston and Moore (1991). Hydraulic properties for the Middle Wilcox Aquifer were extracted from the Northern Portion of the Queen City, Sparta, and Carrizo-Wilcox Aquifer Groundwater Availability Model ("North QCSCW GAM"; Layer 8) Conceptual Report by Schorr and others (2020).

Appendix A provides the latitude and longitude coordinates and pumping rates for the proposed wells on the Bluebonnet Property. Each proposed well will be completed with an outer casing diameter greater than 10 inches and will be equipped with a pump capable of producing the proposed pumping rates outlined in Appendix A. On August 15, 2024, the District provided LRE (via email) a list of all exempt and non-exempt wells registered with the District in Henderson County. LRE compiled all publicly available well data from the NTVGCD, the TWDB, and the SDR Databases to identify wells within a 1-mile radius of the Bluebonnet Property (Appendix B). Figure 1 presents a map of the proposed well locations on the Bluebonnet Property and all surrounding wells in the NTVGCD, TWDB, and SDR Databases within 1-mile of the Bluebonnet Property (Appendix B). All proposed well locations are at least a ¼-mile radial distance from the nearest property boundary and surrounding wells, as shown in Figure 1. These proposed well locations meet the minimum well spacing requirements outlined in District Rule 7(a) and adhere to the TCEQ's well setback requirements from potential sources of contamination or flood-prone areas, as specified in Title 30 of the Administrative Code (30 TAC) §290.41(c)(1).

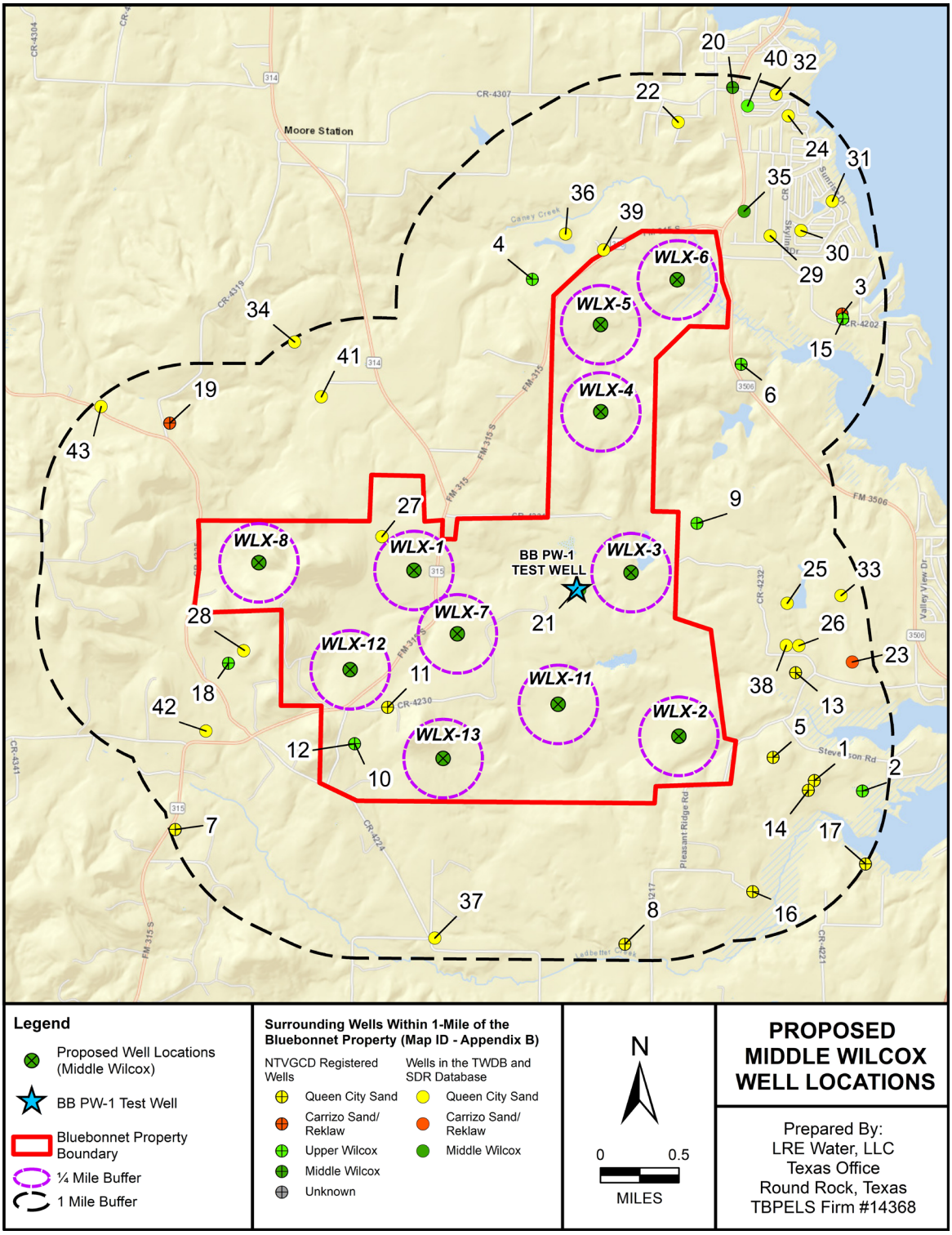


Figure 1. Proposed Middle Wilcox Well Locations on the Bluebonnet Property

Analytical Groundwater Modeling

LRE conducted analytical groundwater modeling to assess local drawdown impacts, recovery time, and well interference between proposed wells on the Bluebonnet Property. Proposed well locations and pumping rates were selected based on considerations of the hydrogeologic conditions, including aquifer depths, net sand thickness, aquifer productivity, hydraulic characteristics, and well spacing requirements. Table 1 summarizes the input parameters used in the analytical modeling, which are based on estimated hydraulic properties from site-specific aquifer tests, interpretation of geophysical logs, surrounding well data and data obtained from the Conceptual North QCSCW GAM Report by Schorr and others (2020).

Table 1. Input Parameters for Analytical Modeling

Proposed Well	Top of Screen (ft bls)	Bottom of Screen (ft bls)	Aquifer Thickness (ft)	Net Sand (ft)	Pump Setting (ft bls)	Static WL (ft bls)	S*	K (gpd/ft^2)	T (gpd/ft)
WLX-1	825	1,215	390	185	650	290	0.0008	105.44	19,500
WLX-2	765	1,175	410	170	600	260	0.0008	105.44	17,925
WLX-3	825	1,185	360	180	650	260	0.0008	105.44	18,980
WLX-4	885	1,265	380	190	700	300	0.0008	105.44	20,035
WLX-5	830	1,215	385	190	625	240	0.0009	105.44	20,035
WLX-6	820	1,215	395	195	600	205	0.0009	105.44	20,560
WLX-7	832	1,225	393	180	675	305	0.0008	105.44	18,980
WLX-8	875	1,270	395	195	700	345	0.0009	105.44	20,560
WLX-11	810	1,200	390	170	650	280	0.0008	105.44	17,925
WLX-12	825	1,235	410	185	675	320	0.0008	105.44	19,505
WLX-13	870	1,235	365	175	700	350	0.0008	105.44	18,450

"ft bls" indicates feet below land surface; land surface elevation from NED (USGS, 2004), "ft" indicates feet, "gpd/ft^2" indicates gallons per day per foot squared, "gpd/ft" indicates gallons per day per foot, "WL" indicates water level, *indicates value is obtained from the North QCSCW GAM (Schorr and others, 2020), S = Storativity (confined aquifer), K = hydraulic conductivity, T = Transmissivity.

Andrews & Foster Drilling Company (A&F) constructed a test well ("BB PW-1") on the Bluebonnet Property, as shown in Figure 1. The BB PW-1 test well was completed with an 8.625-inch outer-diameter casing to approximately 855 feet below land surface (ft bls) and a 3-inch galvanized steel liner from approximately 780 feet bls to 1,198 feet bls. The 3-inch diameter liner consisted of pipe-based screen from approximately 881-923 ft bls, 1,008-1,071 ft bls, and 1,134-1,198 ft bls for a total of 169 feet of screen in the Middle Wilcox Aquifer.

A&F conducted a 25-hour constant rate pumping test at the BB PW-1 test well on April 1-2, 2024, at an average pumping rate of 270 gpm. The static water level was approximately 297 feet bls prior to starting the test. After pumping the well for 25 hours at 270 gpm, there was approximately 92 feet of drawdown in the wellbore, which equates to a specific capacity of 2.93 gpm/ft. LRE analyzed the pumping test data for the pumping portion of

the test using the Cooper-Jacob (1946) solution and the non-pumping (recovery) portion of the test using the Theis (1935) residual drawdown solution. Based on the pumping test results and recovery data, transmissivity was calculated to be approximately 17,820 gallons per day per foot (gpd/ft) from the pumping portion of the test and 8,910 gpd/ft for the recovery portion of the test. The time-drawdown and recovery graphs used to plot the pumping test data and calculate transmissivity are provided in Appendix C.

Hydraulic conductivity for the Middle Wilcox Aquifer at the BB PW-1 test well location was calculated by dividing the transmissivity (in gpd/ft) calculated from the pumping test (Appendix C) by the net sand thickness (or screen length), in feet. Hydraulic conductivity was estimated to be 52.72 gpd/ft^2 to 105.44 gpd/ft^2 for the Middle Wilcox Aquifer beneath the BB PW-1 test well based on the calculated transmissivity of 8,910 gpd/ft and 17,820 gpd/ft and screen length of 169 feet. No observation wells were used during the 25-hour pumping test, and therefore storativity was not calculated for the Middle Wilcox Aquifer. For the analytical modeling, LRE assumed a constant hydraulic conductivity value of 105.44 gpd/ft^2 for the Middle Wilcox Aquifer beneath the Bluebonnet Property. Transmissivity values for the Middle Wilcox Aquifer beneath the Bluebonnet Property were determined by multiplying the net sand thickness of the Middle Wilcox Aquifer and the constant hydraulic conductivity value of 105.44 gpd/ft^2 (Table 1).

Table 2 summarizes the results of the analytical modeling simulating the proposed production in the Middle Wilcox Aquifer after five years using the input parameters in Table 1.

Table 2. Results from the Analytical Modeling After Five Years

Proposed Well	Proposed Pumping Rate (gpm)	Proposed Production (ac-ft/yr)	Drawdown from Pumping Well (ft)	Drawdown Imposed from Surrounding Well (ft)	Cumulative Drawdown in Well (ft)	Recovery Time (Days)
WLX-1	500	809	104	190	294	1,611
WLX-2	475	768	107	167	274	1,768
WLX-3	650	1,051	138	180	318	1,459
WLX-4	650	1,051	131	182	313	1,487
WLX-5	700	1,132	141	174	315	1,474
WLX-6	900	1,456	177	154	330	1,386
WLX-7	450	728	96	196	292	1,619
WLX-8	600	970	118	161	279	1,731
WLX-11	450	728	101	186	288	1,653
WLX-12	475	768	99	181	279	1,717
WLX-13	500	809	109	175	285	1,675

"gpm" indicates gallons per minute, "ft" indicates feet, "ac-ft" indicates acre-feet.

Table 2 presents the cumulative drawdown in each well using the Cooper-Jacob (1946) equation, which includes drawdown in the wellbore from both the pumping well and additional drawdown imposed from other wells pumping in the Middle Wilcox Aquifer on the Bluebonnet Property (Table 2). Based on the proposed pumping rates and estimated hydraulic properties (Table 1), cumulative drawdown in the proposed wells range from approximately 285 to 318 feet after five years (Table 2). Recovery time was calculated as the length of time for water levels to recover 90% of the drawdown after pumping for five years. As indicated in Table 2, the time for water levels in the Middle Wilcox Aquifer to recover 90% of the drawdown ranges from approximately 1,386 to 1,768 days. Hydrographs of the simulated pumping and recovery water levels in each proposed well due to the combined production 10,270 ac-ft/yr at the Bluebonnet Property for five years is presented in Appendix D.

The area of influence can typically be defined as the distance where the impacts from pumping result in 1-foot of drawdown in the aquifer. Figure 2 illustrates the cumulative drawdown and area of influence in the Middle Wilcox Aquifer after five years of pumping, based on the analytical modeling using the Cooper-Jacob (1946) equation and input parameters in Table 1.

It is important to note that the analytical modeling does not consider boundary conditions, such as faults or additional water supply from recharge, which may result from the infiltration of water from precipitation in the aquifer outcrop, or by vertical and lateral movement of water between formations. Therefore, actual aquifer conditions and impacts to the Middle Wilcox Aquifer may differ from the results presented herein.

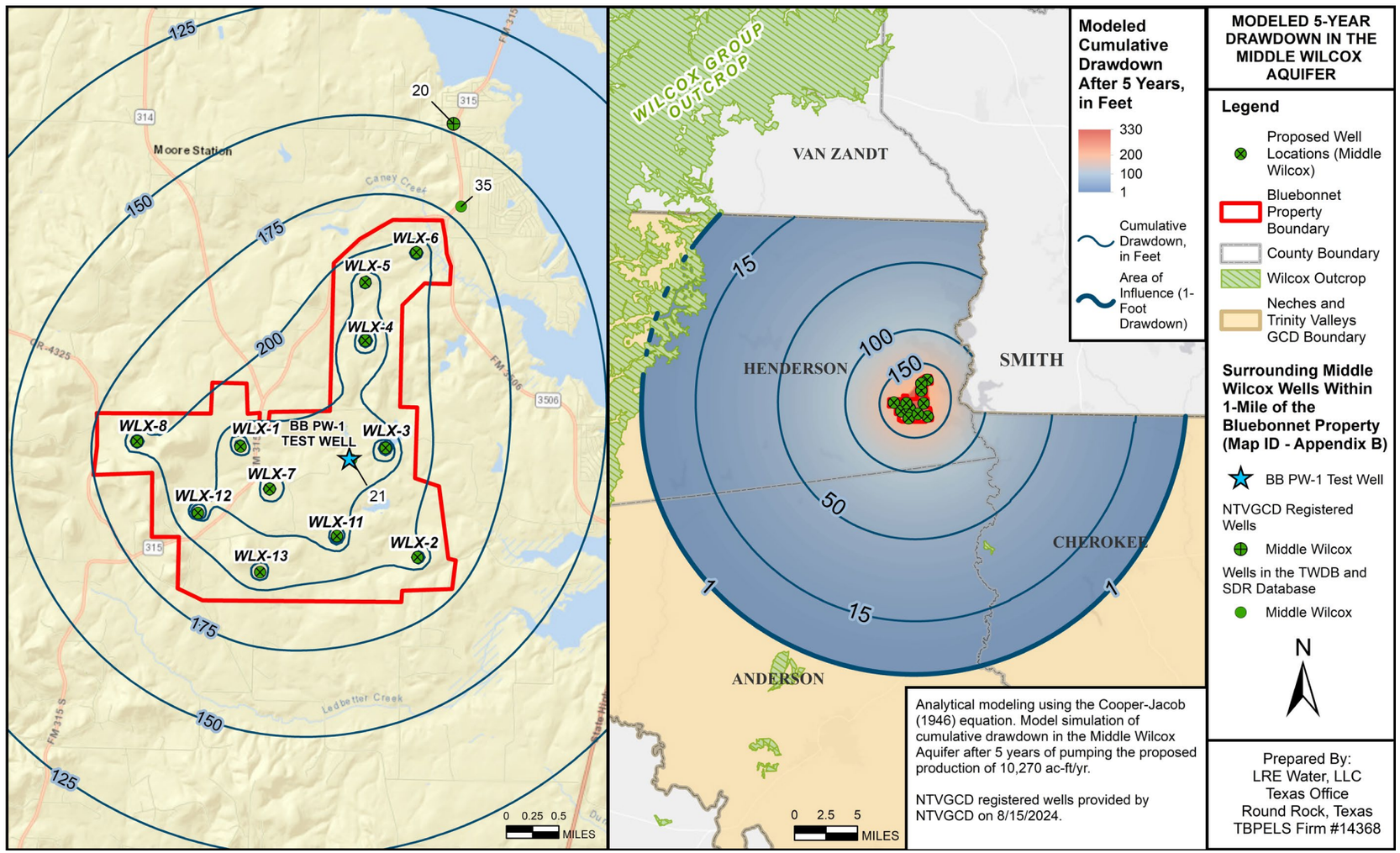


Figure 2. Analytical Modeled Cumulative 5-Year Drawdown in the Middle Wilcox Aquifer

Numerical Groundwater Modeling

LRE conducted numerical modeling to evaluate the regional impacts of the combined production of 10,270 ac-ft/yr from the Middle Wilcox Aquifer (North QCSCW GAM; Layer 8) on the adopted DFCs. The results of the numerical modeling suggest that the proposed combined production of 10,270 ac-ft/yr from the Middle Wilcox Aquifer could not be sustained for five years under current model constraints. Based on LRE's evaluation, transmissivity values for the Middle Wilcox Aquifer calculated from the site specific aquifer test at BB PW-1 (Appendix C) was higher than those computed for the Middle Wilcox Aquifer (Layer 8) in the Numerical Model Report for the North QCSCW GAM by Panday and others (2020). Therefore, the proposed production of 10,270 ac-ft/yr that could be sustained in the analytical modeling was not attainable in the numerical modeling. In addition, the size of the model grid cells and proximity of the proposed wells on the Bluebonnet Property resulted in multiple wells being located in the same model grid cell, leading to accelerated water level depletion in certain model cells. To mitigate this numerical modeling constraint, MODFLOW algorithms automatically reduced the simulated pumping rates to prevent the model cells from being depleted (a process called "auto-flow" reduction in MODFLOW). The combined annual production of 10,270 ac-ft was automatically reduced in MODFLOW to 8,328 ac-ft (Year 1), 7,853 ac-ft (Year 2), 7,609 ac-ft (Year 3), 7,446 ac-ft (Year 4), and 7,318 ac-ft (Year 5), a production reduction of approximately 19-29% (Table 3). Due to model assumptions and limitations, projected impacts from the proposed combined annual production of 10,270 ac-ft from the Middle Wilcox Aquifer could not be accurately depicted. Figure 3 illustrates the cumulative drawdown in the Middle Wilcox Aquifer as result of the auto-flow reduced pumping rates in MODFLOW outlined in Table 3.

Table 3. Auto-Flow Reductions in the Middle Wilcox (Layer 8) in the Numerical Modeling

Model Time (Years)	Combined Pumping Rates (gpm)	Combined Annual Production (ac-ft)	Percent Reduction (%)
0	6,350	10,270	0%
1	5,148	8,328	19%
2	4,854	7,853	24%
3	4,703	7,609	26%
4	4,602	7,446	28%
5	4,523	7,318	29%

"gpm" indicates gallons per minute, "ac-ft" indicates acre-feet.

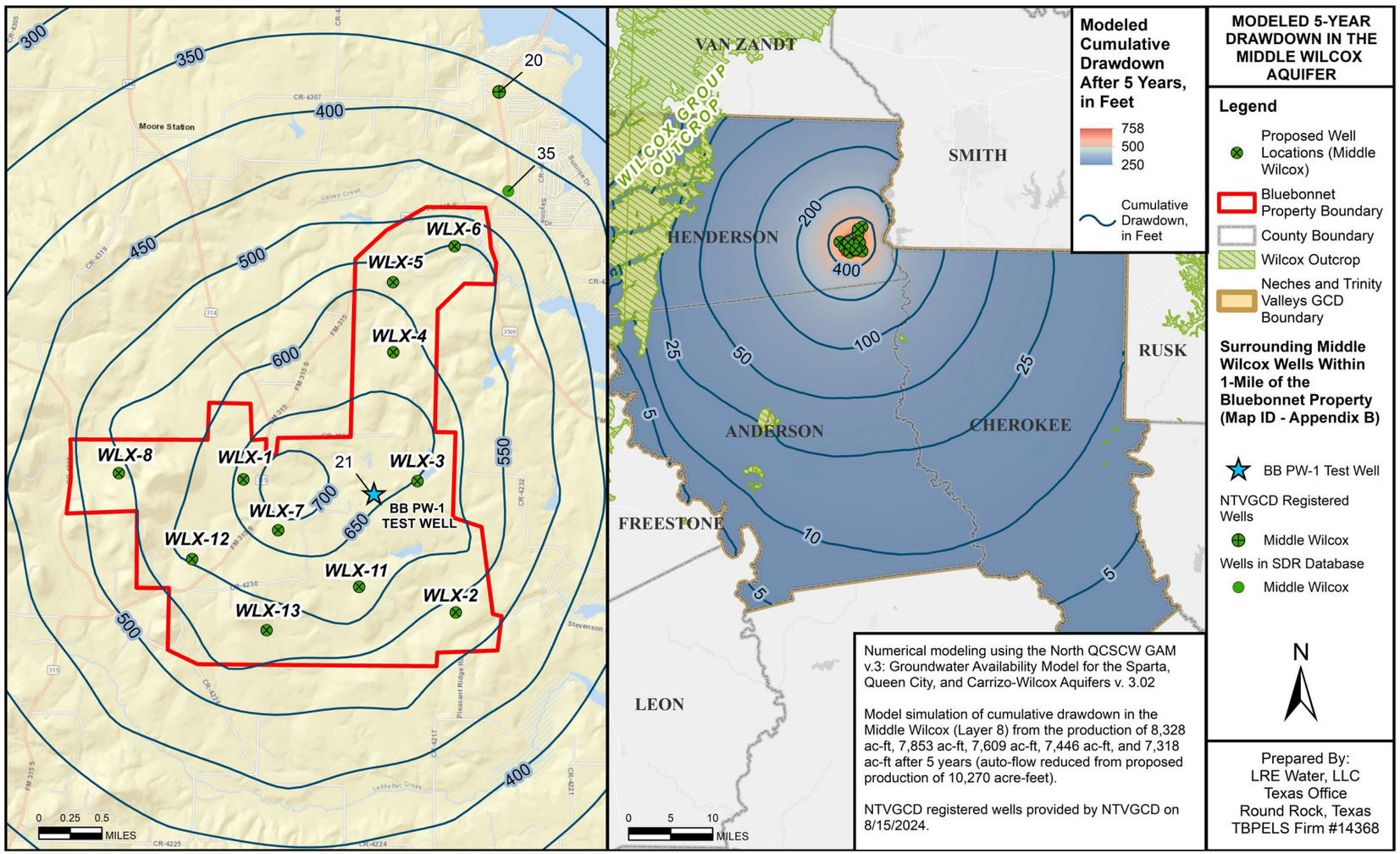


Figure 3. Numerical Modeled Cumulative 5-Year Drawdown in the Middle Wilcox Aquifer (North QCSCW GAM; Layer 8)

While the GAMs are a useful tool for predicting regional changes within aquifer systems, their size and complexity can limit its ability to accurately represent local hydrogeologic conditions. More specifically, GAMs may lack detailed localized data, such as results from pumping tests, current water level measurements, and specific aquifer depths. To more accurately reflect current and future aquifer conditions and regional impacts from the proposed pumpage, updates to the hydraulic properties of the Middle Wilcox Aquifer (Layer 8) in the North QCSCW GAM and/or modifications to the model grid cell size are necessary.

Modeled Available Groundwater and Desired Future Conditions

Modeled available groundwater (MAG), as defined in Chapter 36 of the Texas Water Code (2011), represents the estimated amount of water that may be produced annually to achieve a DFC. The MAG, as set forth in Section H of the District's Groundwater Management Plan (Amended August 15, 2019), is based on the model run GAM Run 17-024 MAG from June 19, 2017 (Wade, 2017). For the Carrizo-Wilcox Aquifer in Henderson County, the MAG is reported to be 13,866 ac-ft from 2010 to 2040, 13,768 ac-ft for 2050, 13,614 ac-ft for 2060, and 13,585 ac-ft for 2070, based on the GAM Run 17-024 MAG (Wade, 2017).

The TWDB issued the most recent GAM Run-21-016 MAG Report for the Carrizo-Wilcox, Queen City, and Sparta Aquifers in GMA-11 on February 17, 2022 (Wade, 2022). This report, which used the North QCSCW GAM and documented development of the estimated modeled available groundwater associated with the DFCs adopted by GMA-11 on August 11, 2021. According to the 2021 Joint Planning Cycle GAM Run 21-016 MAG, the MAG for the Carrizo-Wilcox Aquifer in Henderson County is 7,222 ac-ft/yr from 2020 to 2080 (Wade, 2022).

The most recent DFCs were approved by GMA-11 on August 11, 2021, based on Scenario 33, as documented in Technical Memorandum 21-01 (Hutchinson, 2021a). As described in the GMA-11 Desired Future Conditions Explanatory Report (Hutchinson, 2021c), average drawdown across the county represents the regional average drawdown occurring due to pumping during the period of interest. The recently adopted DFCs for Henderson County are an average drawdown of 106 feet in the Carrizo-Wilcox Aquifer (Layers 6-9) from 2013 to 2080 (Hutchinson, 2021a).

Cumulative drawdown from the numerical modeling was computed and compared to the drawdown from the "Base Run" used to calculate the DFCs for the Carrizo-Wilcox Aquifer (Hutchison, 2021b). Table 4 presents the MODFLOW modeling results comparing the simulated "Base Run" average drawdown in Henderson County after five years, based

on Scenario 33 documented in Technical Memorandum 21-01 (Hutchinson, 2021b), and the simulated model-predicted average drawdown in Henderson County after five years of pumping from the Middle Wilcox Aquifer (Layer 8) at the rates presented in Table 3.

Table 4. Five Year Model Predicted Average Drawdown in Henderson County

Aquifer	Model Layer	Average Drawdown in Henderson County, in Feet		
		Simulated "Base Run" Scenario (TM 21-01)	Simulated "Base Run" & "Proposed WLX"	Simulated "Proposed WLX" Only
Queen City	4	16.5	18.0	1.5
Carrizo	6	101.0	135.8	34.8
Upper Wilcox	7	72.8	99.3	26.5
Middle Wilcox	8	56.5	113.2	56.7
Lower Wilcox	9	47.2	89.8	42.6
Avg CZ-WLX	6-9	69.4	109.5	40.2

"Base Run" indicates the Groundwater Availability Model (GAM) Scenario 33, TM 21-01 (Hutchinson, 2021b), "Proposed WLX" indicates proposed production in the Middle Wilcox Aquifer (Layer 8) based on MODFLOW auto-reduced flowrates in Table 3, "Avg CZ-WLX" indicates average of drawdown in the Carrizo-Wilcox Aquifer (Layers 6-9).

LRE calculated the average drawdown in all layers of the Carrizo-Wilcox Aquifer (North QCSCW GAM Layers 6-9), as the DFCs are presented as average drawdown in all layers of the Carrizo-Wilcox Aquifer System (Wade, 2022). The average drawdown in Henderson County from the "Base Run" is approximately 69.4 feet in all layers of the Carrizo-Wilcox Aquifer (North QCSCW GAM Layers 6-9) after five years, as indicated in Table 4 (Hutchison, 2021b). The additional drawdown in the Carrizo-Wilcox Aquifer in Henderson County due to only the proposed production at the Bluebonnet Property (Simulated "Proposed WLX" Only) is approximately 40.2 feet after five years (Table 4).

It is important to note that the average drawdown in Henderson County presented in Table 4 is a result of the production rates in Table 3, as the combined annual production of 10,270 ac-ft from the Middle Wilcox Aquifer could not be accurately depicted due to current model limitations and assumptions.

Regional Water Plan

The place of use for the proposed water will be in areas that are currently experiencing significant water challenges, specifically in counties that are part of Regional Water Planning Areas C, G, H, K, and/or L. Detailed and board-approved water plans are accessible at the following links: https://www.twdb.texas.gov/waterplanning/rwp/regions/ and https://texasstatewaterplan.org/statewide. Based on the 2021 Interactive State Water Plan Viewer, the following deficits are projected:

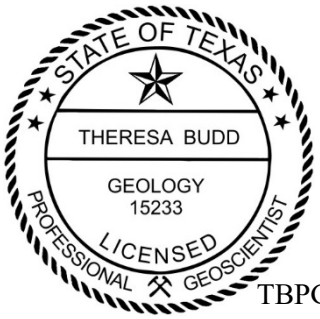
- Region C: A shortfall of 250,000 acre-feet by 2030, increasing to a 1.24 million acre-feet deficit by 2070.
- Region G: A shortfall of 100,000 acre-feet by 2040, increasing up to a 300,000 acre-feet deficit by 2070.
- Region K: A shortfall of 40,000 acre-feet by 2040, increasing to a 100,000 acre-feet deficit by 2070.
- Region L: A shortfall of 50,000 acre-feet by 2030, increasing to a 210,000 acre-feet deficit by 2070.
- Region H: A shortfall of 210,000 acre-feet by 2030, increasing to 700,000 acre-feet deficit by 2070.

Based on the planning data for 2026, which is currently under development, greater deficits are expected in these Regional Planning Areas. However, according to the 2021 Interactive State Water Plan Viewer, Henderson County is projected to have no water deficit from now until 2070. The water to be produced from the Middle Wilcox Aquifer is crucial for serving populations in regions of Texas that are expected to face significant water shortages.

LRE appreciates the opportunity to provide you with this Hydrogeologic Report on behalf of Pine Bliss, LLC. If you have any questions, please do not hesitate to contact us.

Sincerely,

LRE Water



9/5/2024
TBPG Firm #50516

Theresa Budd, PG
Senior Project Hydrogeologist

Vince Clause, PG, GISP
Texas Groundwater Lead

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Appendix A –

Location of Proposed Middle Wilcox Wells on the Bluebonnet Property

Appendix A – Location of Proposed Wilcox Wells

Proposed Well	Latitude (NAD83) Decimal Degrees	Longitude (NAD83) Decimal Degrees	Latitude (NAD83) Degrees Minutes Seconds	Longitude (NAD83) Degrees Minutes Seconds	Proposed Pumping Rate (gpm)	Proposed Production (ac-ft/yr)
WLX-1	32.14472	-95.55060	32° 8' 40.989" N	95° 33' 2.165" W	500	809
WLX-2	32.12999	-95.52142	32° 7' 47.961" N	95° 31' 17.125" W	475	768
WLX-3	32.14499	-95.52703	32° 8' 41.972" N	95° 31' 37.305" W	650	1,051
WLX-4	32.15976	-95.53072	32° 9' 35.152" N	95° 31' 50.577" W	650	1,051
WLX-5	32.16781	-95.53097	32° 10' 4.123" N	95° 31' 51.494" W	700	1,132
WLX-6	32.17212	-95.52276	32° 10' 19.624" N	95° 31' 21.927" W	900	1,456
WLX-7	32.13896	-95.54572	32° 8' 20.254" N	95° 32' 44.601" W	450	728
WLX-8	32.14509	-95.56746	32° 8' 42.311" N	95° 34' 2.862" W	600	970
WLX-11	32.13267	-95.53460	32° 10' 4.123" N	95° 32' 51.494" W	450	728
WLX-12	32.13541	-95.55727	32° 8' 7.471" N	95° 33' 26.189" W	475	768
WLX-13	32.12743	-95.54696	32° 7' 38.732" N	95° 32' 49.050" W	500	809
Total Combined Annual Production in the Middle Wilcox Aquifer					6,350	10,270

"NAD83" indicates North American Datum of 1983, "gpm" indicates gallons per minute, "ac-ft/yr" indicates acre-feet per year.

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Appendix B –

Surrounding Wells Within 1-Mile of the Bluebonnet Property

Appendix B – Surrounding Wells Within 1-Mile of the Bluebonnet Property

Map ID	Well ID (NTVGCD Permit Number, Well Report Tracking Number, or State Well Number)	Source ID (NTVGCD, SDR, TWDB Database)	Latitude (NAD83)	Longitude (NAD83)	Well Name/Owner	Well Depth/ Borehole Depth (ft)	Well Use	LRE-Designated Aquifer
1	663395	SDR	32.12619	-95.50659	JOHN TYLER	80	Domestic	Queen City
2	652256	SDR	32.12533	-95.50135	ILC-OWP, LP	680	Irrigation	Upper Wilcox
3	636994	SDR	32.16932	-95.50476	TENDALLA LTD	300	Domestic	Reklaw/Carrizo
4	629584	SDR	32.17185	-95.5385	TIM BAKER	380	Domestic	Upper Wilcox
5	615439	SDR	32.12824	-95.51113	RICHARD MCCARTY	60	Domestic	Queen City
6	586696	SDR	32.16447	-95.51559	HALLMAN INVESTMENT LLC	440	Domestic	Upper Wilcox
7	582738	SDR	32.12028	-95.57583	TYRONE MILLER	62	Domestic	Queen City
8		SDR	32.11068	-95.52674	MARK WAGLEY	168	Agriculture	Queen City
9	570066	SDR	32.14969	-95.51999	HILL AG ENTERPRISES	480	Domestic	Upper Wilcox
10	563374	SDR	32.1286	-95.5566	ANITA FEHERTY	540	Domestic	Upper Wilcox
11	546901	SDR	32.13203	-95.55311	THREE MILLER RANCH	130	Agriculture	Queen City
12	532177	SDR	32.1286	-95.5566	ANITA FEHERTY	480	Domestic	Upper Wilcox
13	523795	SDR	32.13611	-95.50889	MICHAEL HILL	78	Domestic	Queen City
14	517593	SDR	32.12528	-95.50722	BRENT MCCARTY	80	Domestic	Queen City
15	486956	SDR	32.16888	-95.50466	TENDALLA LTD	640	Domestic	Upper Wilcox
16	437282	SDR	32.11581	-95.51301	C. M. MORTON	83	Domestic	Queen City
17	430474	SDR	32.11861	-95.50083	JERRY JONES	75	Domestic	Queen City
18		SDR	32.13575	-95.5705	VIRGIL WILDRICK	620	Domestic	Upper Wilcox
19	H0087 / 187619	NTVGCD / SDR	32.157778	-95.5775	MOORE STATION WSC 4	1,006	Public Supply	Carrizo
20	H0005 / 73677	NTVGCD / SDR	32.19	-95.517222	AQUA SOURCE LAKE PALESTINE 5	1,130	Public Supply	Middle Wilcox
21	673473	SDR	32.143286	-95.532547	Pine Bliss LLC (Test Well)	1,220	Irrigation	Middle Wilcox
22	37785	SDR	32.186667	-95.523055	F.J. Richardson	78	Domestic	Queen City
23	44450	SDR	32.137222	-95.502778	THORNTON DESIGN & CONST INC	460	Domestic	Carrizo Reklaw
24	86539	SDR	32.1875	-95.511112	L.M. Becker	111	Domestic	Queen City
25	98275	SDR	32.1425	-95.510001	MAC McCLELLAN	225	Irrigation	Queen City
26	98276	SDR	32.138611	-95.508612	MAC McCLELLAN	230	Irrigation	Queen City
27	110809	SDR	32.147778	-95.554167	BILL RUSSELL	270	Domestic	Queen City

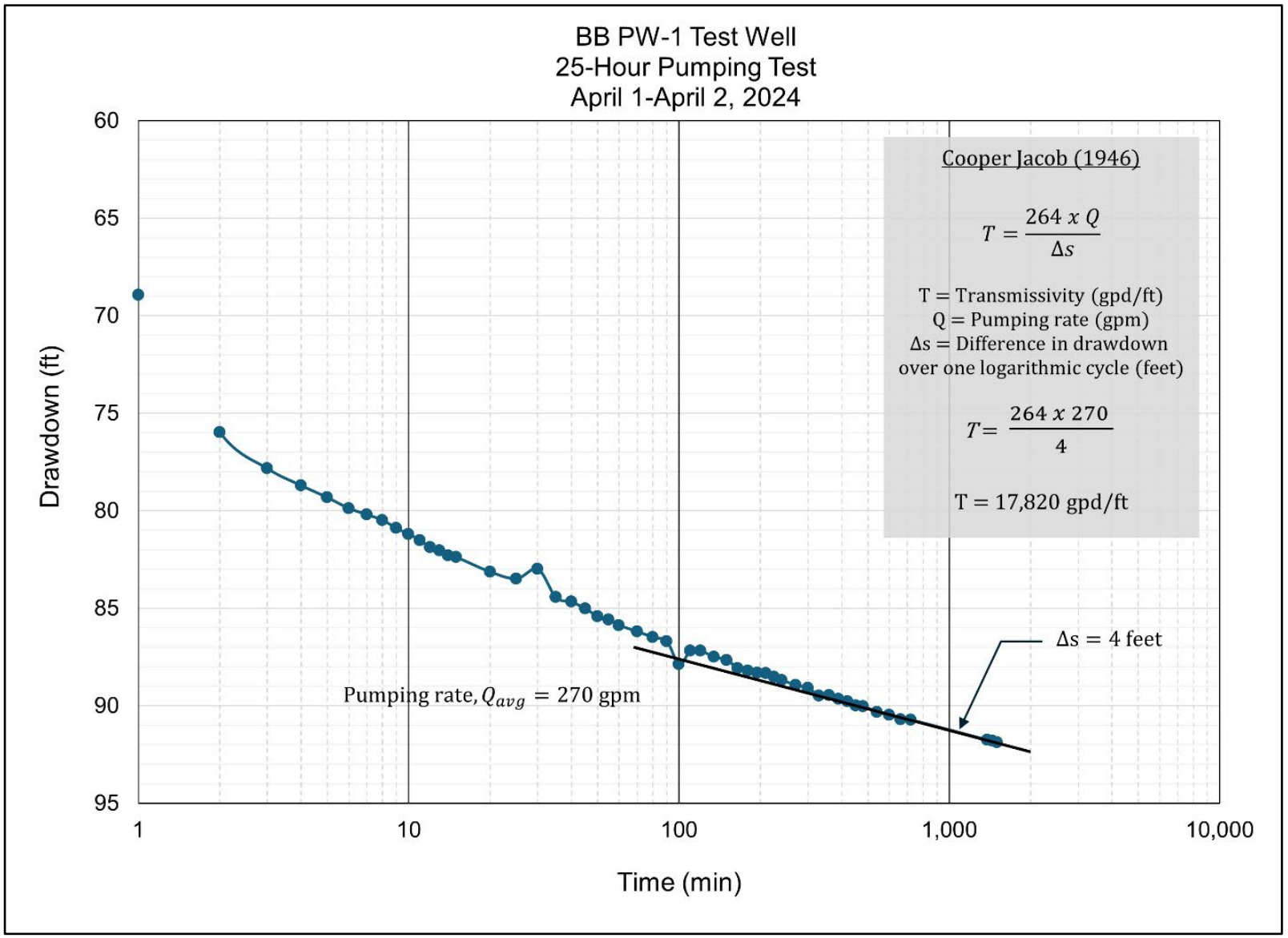
Map ID	Well ID (NTVGCD Permit Number, Well Report Tracking Number, or State Well Number)	Source ID (NTVGCD, SDR, TWDB Database)	Latitude (NAD83)	Longitude (NAD83)	Well Name/Owner	Well Depth/ Borehole Depth (ft)	Well Use	LRE-Designated Aquifer
28	127878	SDR	32.136945	-95.568889	Jimmy Dial	81	Domestic	Queen City
29	183721	SDR	32.176389	-95.512778	Loyed Wellesley	108	Domestic	Queen City
30	184269	SDR	32.176944	-95.509445	D. Whisenhunt	100	Domestic	Queen City
31	212710	SDR	32.179722	-95.506112	ED MORVANT	50	Domestic	Queen City
32	305233	SDR	32.189445	-95.512501	Marie Wellesley	98	Domestic	Queen City
33	308359	SDR	32.143334	-95.504167	Ronald Bruton Farms	142	Irrigation	Queen City
34	308362	SDR	32.165556	-95.564167	Ben Haynes	150	Domestic	Queen City
35	468983	SDR	32.178598	-95.515672	Aqua Texas Inc.	1,425	Public Supply	Middle Wilcox
36	580789	SDR	32.176111	-95.535	Brandon Wilbanks	222	Domestic	Queen City
37	641945	SDR	32.110839	-95.547395	David Dickerson	105	Domestic	Queen City
38	34355	SDR	32.138611	-95.510001	Dale Williams	78	Domestic	Queen City
39	3452603	TWDB	32.174722	-95.530833	Badie Warren	40	Domestic	Queen City
40	3452608	TWDB	32.188334	-95.515556	Stanler McCurley (Parkside Shores)	860	Public Supply	Upper Wilcox
41	3452803	TWDB	32.160556	-95.561112	A.C. Prestwood	38	Unused	Queen City
42	3452804	TWDB	32.129444	-95.572778	Jack Barton	51	Unused	Queen City
43	3452703	TWDB	32.159167	-95.585	Homer Earl	162	Domestic	Queen City

“NTVGCD” indicates Neches and Trinity Valleys Groundwater Conservation District, “SDR” indicates Submitted Drillers Report, “TWDB” indicates Texas Water Development Board, “NAD83” indicates North American Datum of 1983, “ft” indicates feet, LRE-Aquifer Designation determined based on well depth/screen interval.

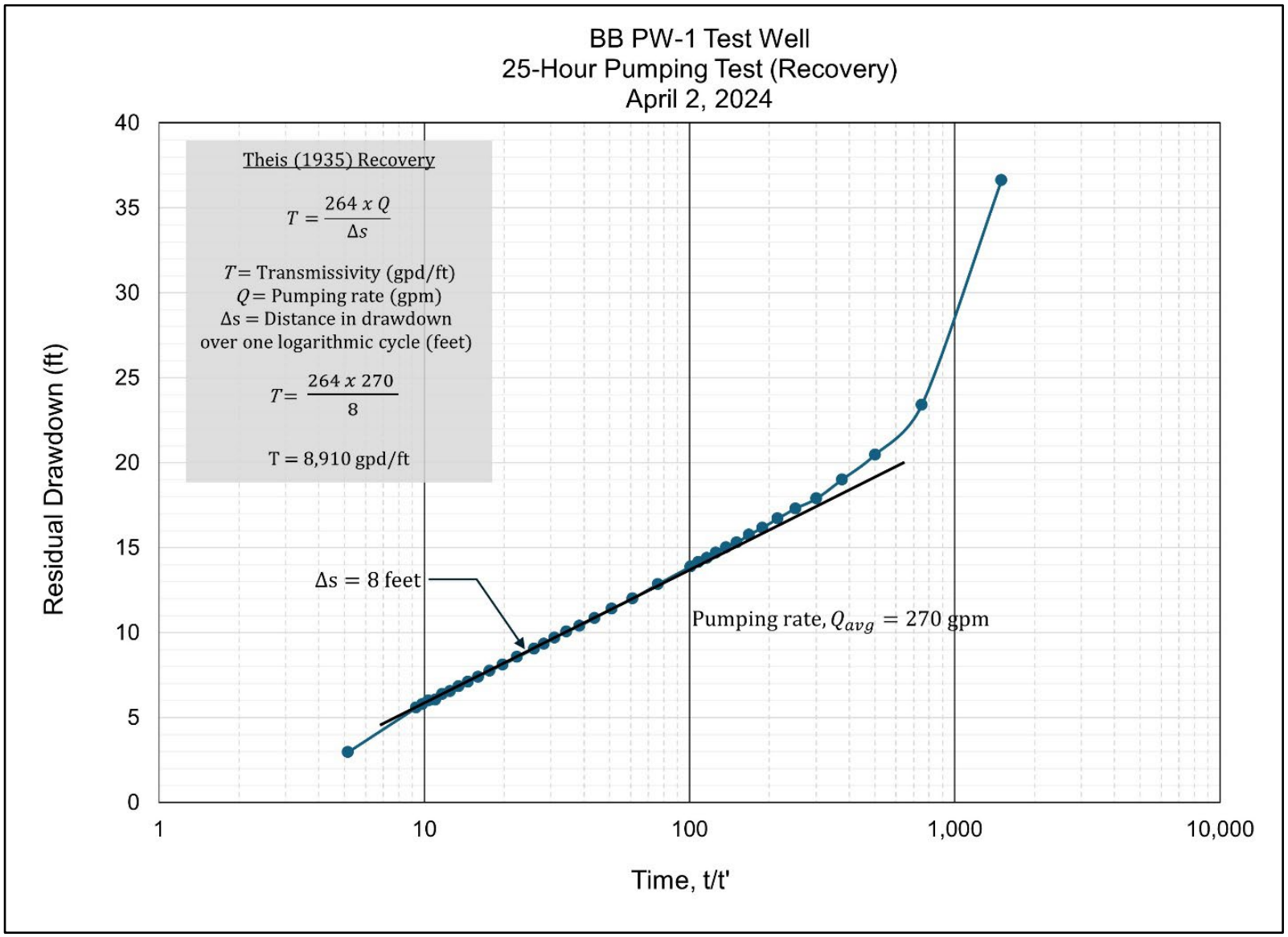
Appendix C –

Aquifer Test Results from BB PW-1 Test Well on the Bluebonnet Property

Appendix C – Time-Drawdown Graph for BB PW-1 Test Well



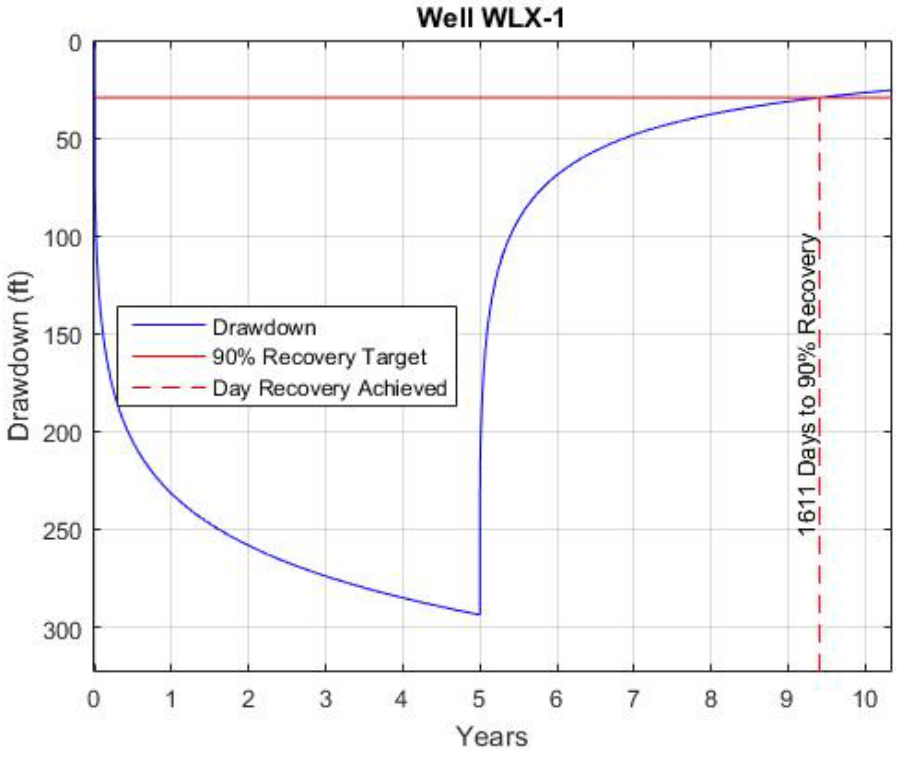
Appendix C – Recovery Graph for BB PW-1 Test Well

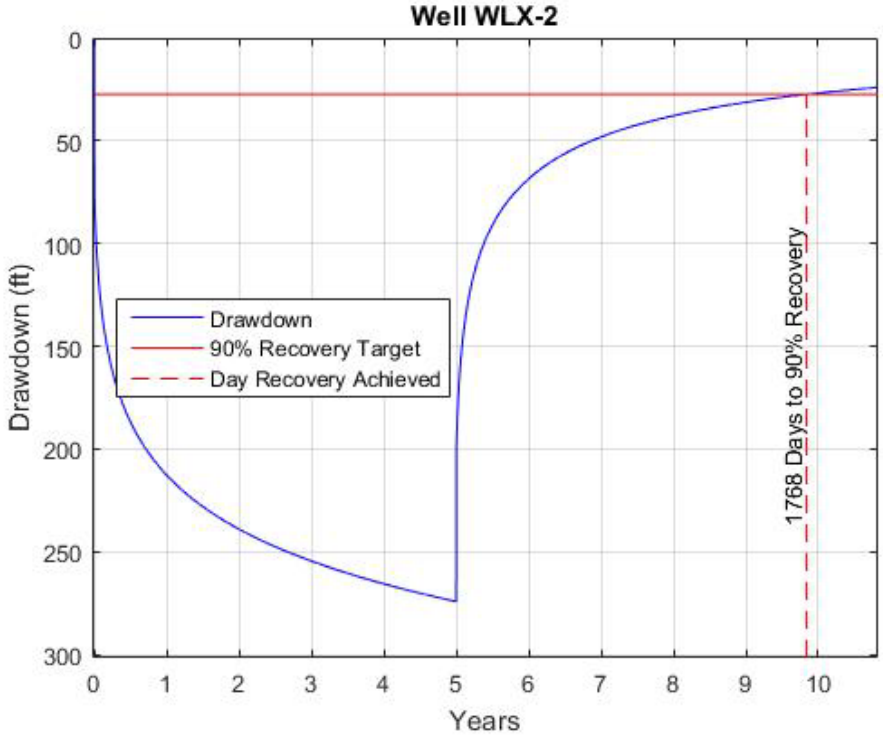


Appendix D –

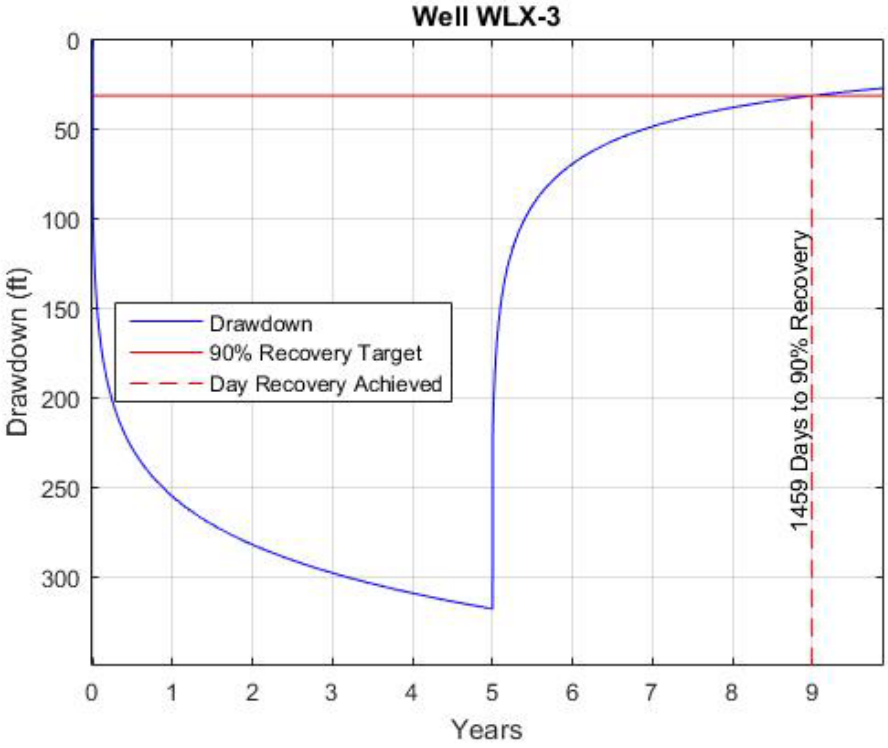
Pumping and Recovery Hydrographs from Analytical Modeling

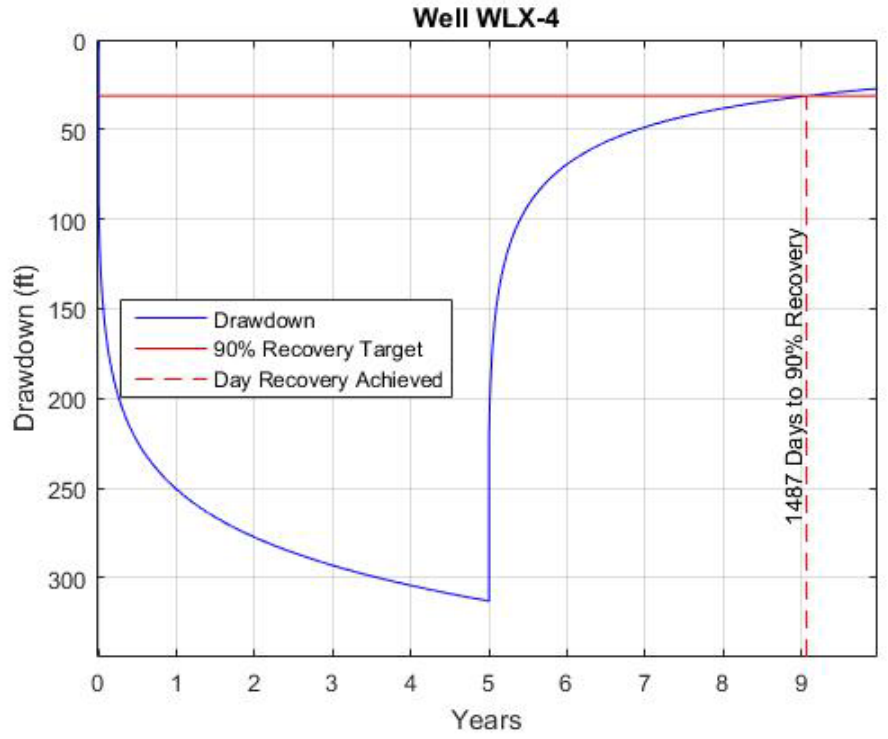
Appendix D – Cumulative Drawdown and Recovery Hydrographs



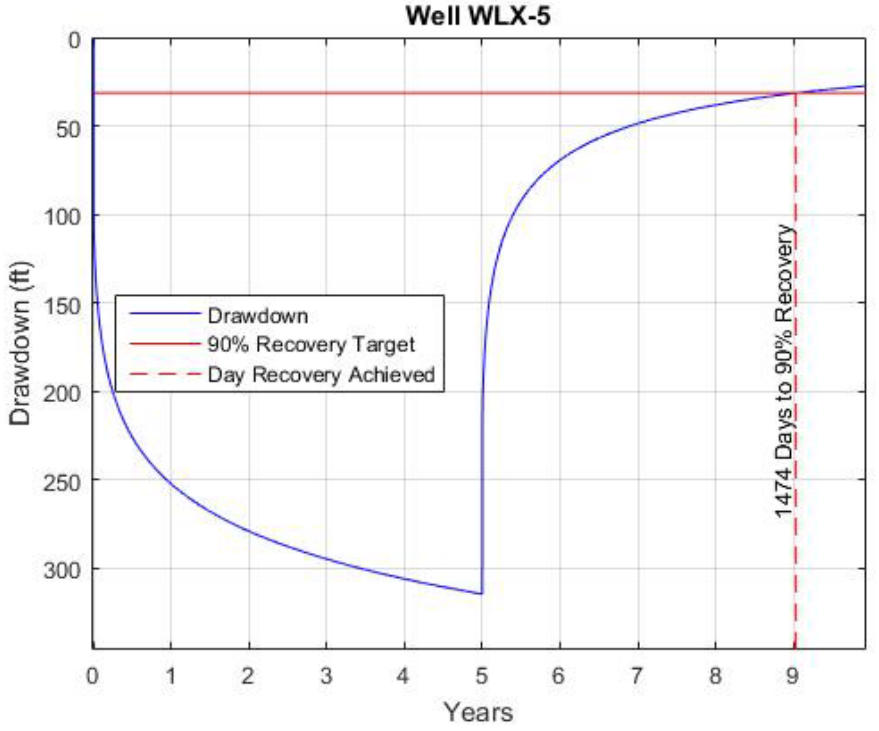


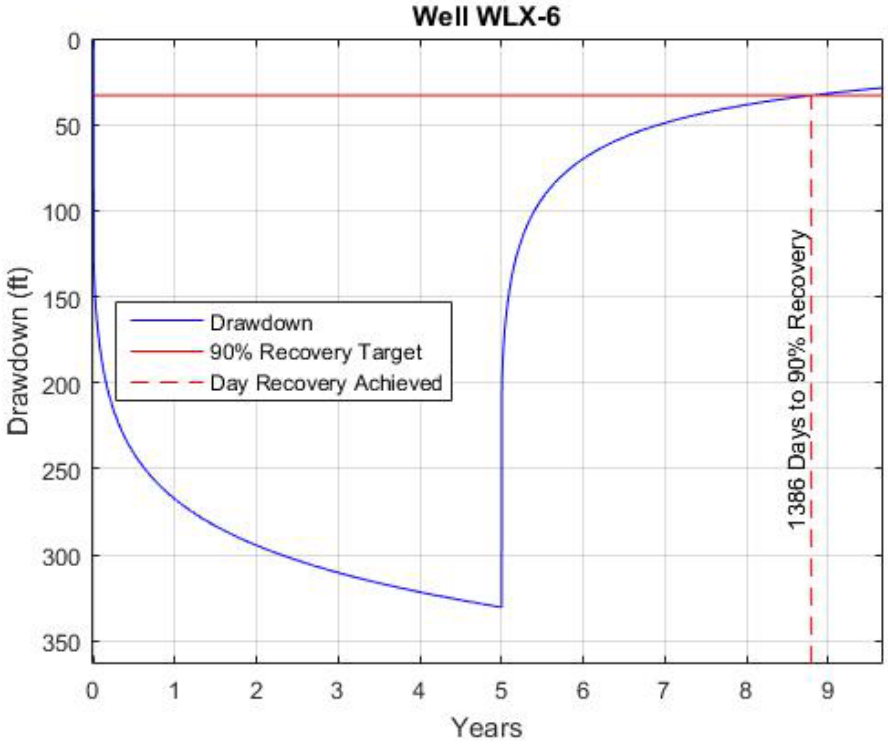
Appendix D – Cumulative Drawdown and Recovery Hydrographs



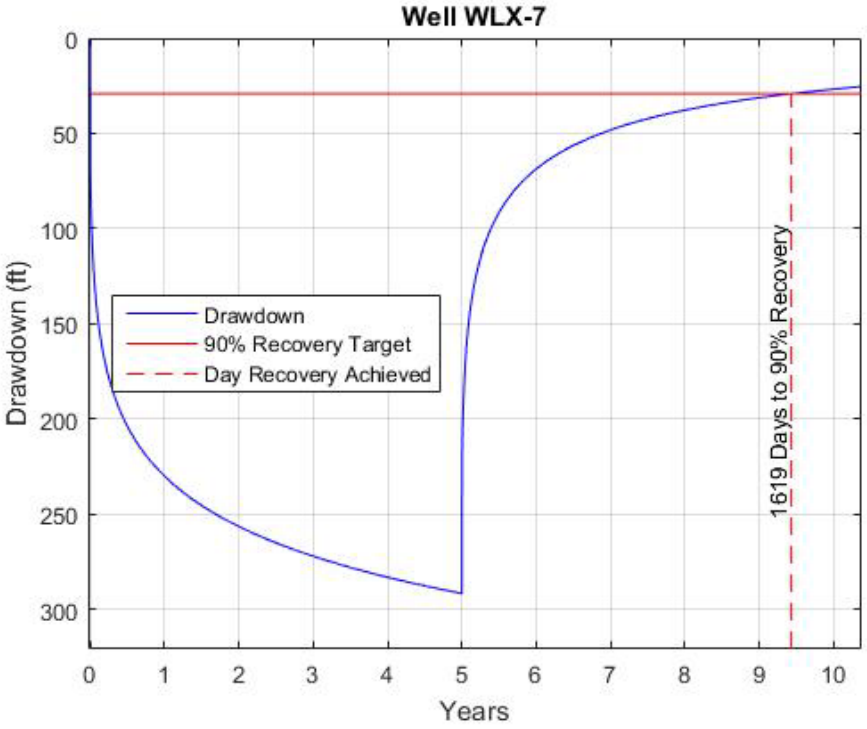


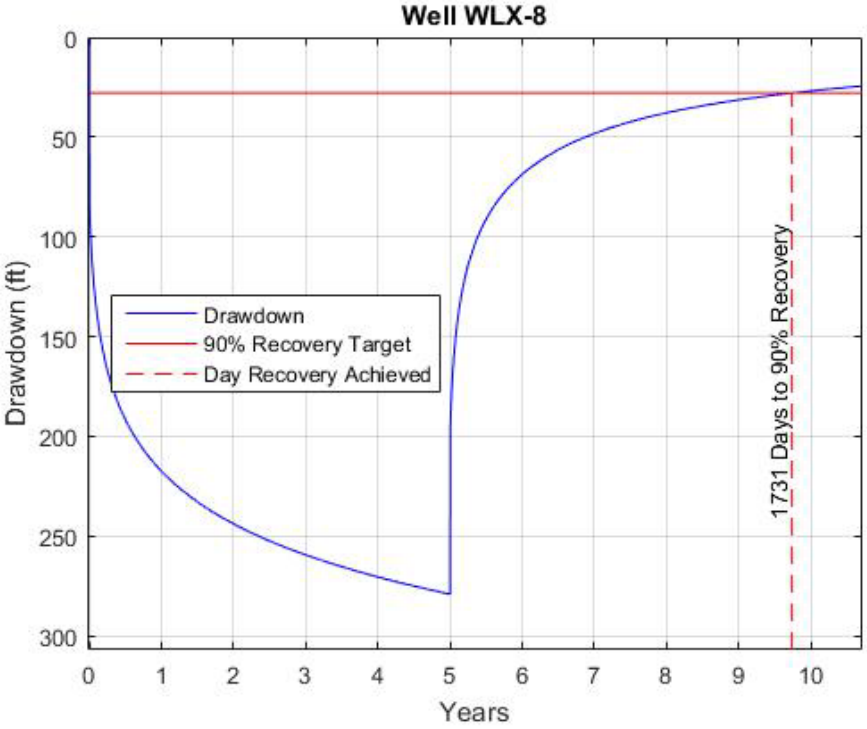
Appendix D – Cumulative Drawdown and Recovery Hydrographs



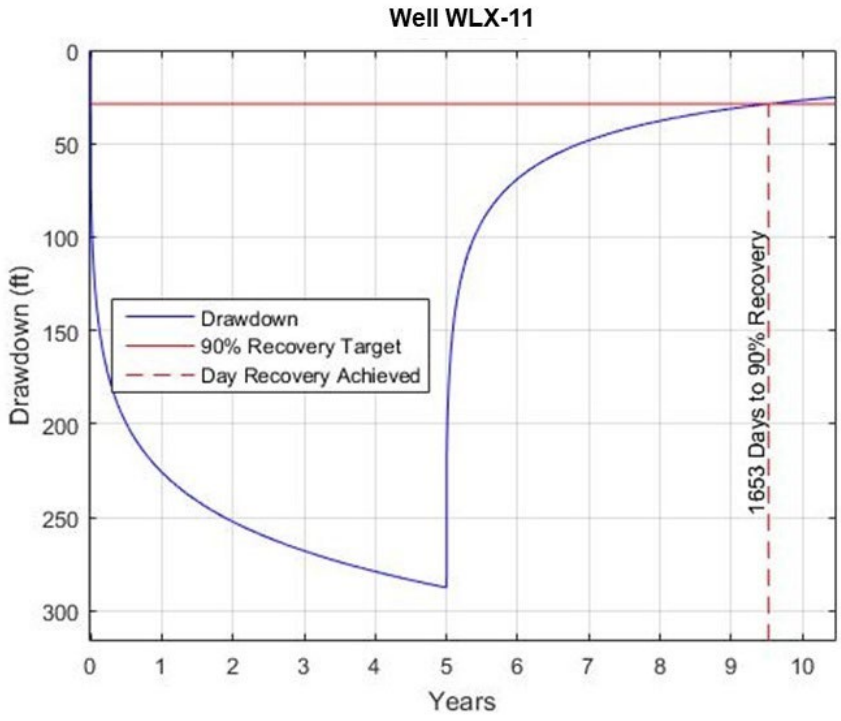


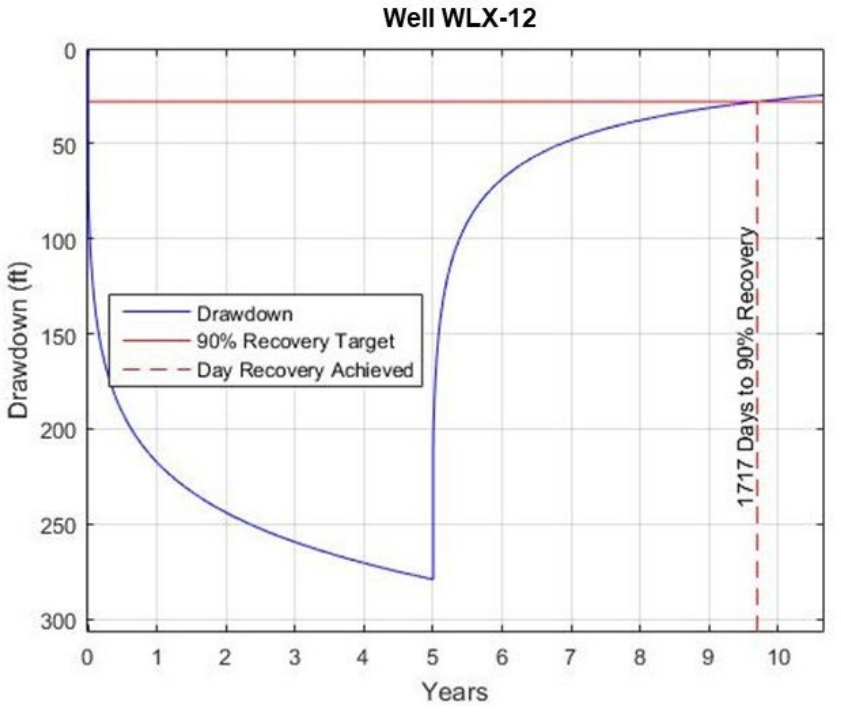
Appendix D – Cumulative Drawdown and Recovery Hydrographs





Appendix D – Cumulative Drawdown and Recovery Hydrographs





Appendix D – Cumulative Drawdown and Recovery Hydrographs