APPENDIX A TO THE INJECTION WELL PLUGGING PLAN: MONITOR AND WATER WITHDRAWAL WELLS

Brown Pelican CO_2 Sequestration Project

1.0 Facility Information and Overview

Facility name: Brown Pelican CO_2 Sequestration Project
BRP CCS1, BRP CCS2 and BRP CCS3 Wells

Facility contact: [redacted]

Well location: Penwell, Texas

BRP CCS1	31.76481926	-102.72891895
BRP CCS2	31.76994887	-102.73320589
BRP CCS3	31.76024766	-102.71013484

2.0 Plugging Plans for Monitor and Water Withdrawal wells

Oxy Low Carbon Ventures, LLC (OLCV) will conduct injection well plugging and abandonment (P&A) according to the procedures contained in this document. These procedures may be modified

if changes are made to the design of the wells before or after initial construction. Well design, construction and plugging will be conducted in accordance with state regulatory requirements.

A table of planned plugging dates is shown below. Plugging dates will be updated based on Testing and Monitoring information obtained during the Injection and Post-Injection periods.

Table 1--Planned plugging of monitor and other wells

API or State well number	Project Well Name	Regulatory Well Name	Purpose	Drill Date	Anticipated Plug Date	Latitude (NAD 27)	Longitude (NAD 27)
4213544065	SLR2	Shoe Bar Ranch 2SL	Injection Zone monitor	2025	~20 years post Injection Period	31.74657954	-102.72586378
4213543920	SLR1 or Shoe Bar 1	Shoe Bar Ranch 1	Stratigraphic test, Confining Zone monitor	2023	2025[1] and ~10 years post Injection Period	31.76343592	-102.70349808
4213543977	ACZ1 or Shoe Bar 1AZ	Shoe Bar Ranch 1AZ	Stratigraphic test, Confining Zone monitor	2023	2025[1] and ~10 years post Injection Period	31.76448867	-102.73053251
657173	USDW1	ShoeBar Monitor Well #1	USDW monitor	2024	~20 years post Injection Period	31.76411900	-102.7316750
4213544035	WW1	Shoe Bar Ranch 1WW	Brine withdrawal, Injection Zone monitor	2024	End of Injection Period	31.76289537	-102.69592320
4213544036	WW2	Shoe Bar Ranch 2WW	Brine withdrawal, Injection Zone monitor	2024	After ~seven years of injection[2] End of Injection Period	31.78419970	-102.72758691
4213544037	WW3	Shoe Bar Ranch 3WW	Brine withdrawal, Injection Zone monitor	2024	End of Injection Period	31.75008559	-102.71022070
4213544034	WW4	Shoe Bar Ranch 4WW	Brine withdrawal, Injection Zone monitor	2024	End of Injection Period	31.76384466	-102.75395043
NA	SLR3	Shoe Bar Ranch 3SL	Injection Zone monitor	~2030; ~5 years after commencement of CO_2 injection	~10 years post Injection Period	31.78023685	-102.7418093

[1]conversion from stratigraphic test well to monitor well
[2]plugging of Holt

2.1 Information on Plugs

OLCV will use the materials and methods noted in the following Tables 2-13 to plug the Monitoring (SLR and ACZ) and brine water withdrawal (WW) wells. The volume and depth of the plug or plugs will depend on the final geology and downhole conditions of the well as assessed during construction.

The cement(s) formulated for plugging the SLR1, ACZ1, SLR2, SLR3, WW1, WW2, WW3, WW4, and USDW1 will be compatible with CO_2. Discussion about CO_2 resistant cement selection and additive is located in the Construction Plan – Appendix B. In the Plugging Plan of this application, Section 3.0, the curing time for CO_2 resistant cement is assumed to be 4 hours. The curing time for the CO_2 resistant plugs will be determined at time of operation via laboratory testing in compliance with API 10B2 (Testing of Oilwell Cements). OLCV utilizes industry recognized thresholds of 50 psi compressive strength to pressure test and 500 psi compressive strength for physically tagging. 500 psi (or greater) compressive strength will be achieved for abandonment slurries and will be reached in < 48 hours after placement. All plug mud will be 9.5-10 ppg NaCl brine with lime added at 1.0 ppb (pound per barrel) to raise the PH to >10.5 to combat corrosion, H_2S and CO_2 contamination. Xanthan gel will be added to the mud so that the viscosity is > 50 sec/qt.

The cement for plugging the USDW1 will be in accordance with state regulatory guidelines.

Table 1—Information on Cement Plugs for Conversion from Shoe Bar 1 to SLR1

Plug No.	Placement Method	Type Slurry	ID (in.)	MD Depths (ft)	Density (ppg)	Sacks	bbl
1	Squeeze plug	CO_2-resistant cement	4.892	6,207 to 6,427	14.5	400	95
2	Balance plug	CO_2-resistant cement	4.892	5,713 to 6,207	14.5	98	22
3	Squeeze plug	CO_2-resistant cement	4.892	4,382 to 5,045	14.5	400	95
4	Balance plug	CO_2-resistant cement	4.892	4,067 to 4,382	14.5	8	4

Note:

- All plug depths were reviewed by Texas RRC prior to commencing plugging operations.

Table 3—Information on Plugging SLR1 in the Post-Injection Period

Plug No.	Placement Method	Type Slurry	ID (in.)	MD Depths (ft)	Density (ppg)	Sacks	bbl
1	Balance plug	CO_2-resistant cement	4.892	3,700 to 3,850	14.8	17	4
2	Balance plug	CO_2-resistant cement	4.892	2,488 to 2,588	14.8	11	3
3	Balance plug	CO_2-resistant cement	4.892	1,748 to 1,848	14.8	11	3
4	Balance plug	CO_2-resistant cement	4.892	801 to 901	14.8	11	3
5	Balance plug	CO_2-resistant cement	4.892	0 to 475	14.8	52	12

Note:

- All plug depths will be reviewed and adjusted, if needed, by EPA and Texas RRC prior to commencing plugging operations.

Table 4—Information on Plugging SLR2

Plug No.	Placement Method	Type Slurry	ID (in.)	MD Depths (ft)	Density (ppg)	Sacks	bbl
1	Squeeze plug	CO_2-resistant cement	4.892	4,340 to 5,160	14.8	208	48
2	Balance plug	CO_2-resistant cement	4.892	4,240 to 4,340	14.8	12	3
3	Balance plug	CO_2-resistant cement	4.892	3,698 to 4,154	14.8	52	12
4	Balance plug	CO_2-resistant cement	4.892	2,700 to 2,800	14.8	12	3
5	Balance plug	CO_2-resistant cement	4.892	1,738 to 1,8380	14.8	12	3
6	Balance plug	CO_2-resistant cement	4.892	797 to 897	14.8	12	3
7	Balance plug	CO_2-resistant cement	4.892	0 to 475	14.8	56	13

Note:

- All plug depths will be reviewed and adjusted, if needed, by EPA and Texas RRC prior to commencing plugging operations.

Table 5—Information on Plugging SLR3

Plug No.	Placement Method	Type Slurry	ID (in.)	MD Depths (ft)	Density (ppg)	Sacks	bbl
1	Squeeze plug	CO_2-resistant cement	4.892	4,300 to 5,216	14.8	226	53
2	Balance plug	CO_2-resistant cement	4.892	4,200 to 4,300	14.8	12	3
3	Balance plug	CO_2-resistant cement	4.892	3,700 to 4,136	14.8	52	12
4	Balance plug	CO_2-resistant cement	4.892	2,700 to 2,800	14.8	12	3
5	Balance plug	CO_2-resistant cement	4.892	1,750 to 1,850	14.8	12	3
6	Balance plug	CO_2-resistant cement	4.892	814 to 914	14.8	12	3
7	Balance plug	CO_2-resistant cement	4.892	0 to 475	14.8	56	13

Notes:

- All plug depths will be adjusted after the well is drilled and completed.
- The plugging procedure will be updated as required by EPA and Texas RRC.
- Formation tops will be adjusted after running openhole electric logs.

Table 6—Information on Plugging for Conversion of Shoe Bar 1AZ to ACZ1 Monitor

Plug No.	Placement Method	Type Slurry	ID (in.)	MD Depths (ft)	Density (ppg)	Sacks	bbl
1	Squeeze plug	CO_2-resistant cement	4.892	6,452 to 6,650	14.5	272	65
2	Balance plug	CO_2-resistant cement	4.892	5,756 to 6,452	14.5	71	17
3	Balance plug	CO_2-resistant cement	4.892	5,280 to 5,380	14.5	50	12
4	Squeeze plug	CO_2-resistant cement	4.892	4,492 to 5,250	14.5	200	48
5	Balance plug	CO_2-resistant cement	4.892	4,375 to 4,492	14.5	18	4

Note:

- All plug depths were reviewed by Texas RRC prior to commencing plugging operations.

Table 7—Information on Plugging ACZ1 in the Post Injection Period

Plug No.	Placement Method	Type Slurry	ID (in.)	MD Depths (ft)	Density (ppg)	Sacks	bbl
1	Balance plug	CO_2-resistant cement	4.892	3,792 to 3,971	14.8	20	4.6
2	Balance plug	CO_2-resistant cement	4.892	2,450 to 2,550	14.8	11	3
3	Balance plug	CO_2-resistant cement	4.892	1,764 to 1,864	14.8	11	3
4	Balance plug	CO_2-resistant cement	4.892	814 to 914	14.8	11	3
5	Balance plug	CO_2-resistant cement	4.892	0 to 475	14.8	52	12

Note:

- All plug depths will be reviewed and adjusted, if needed, by EPA and Texas RRC prior to commencing plugging operations.

Table 8—Information on Plugging USDW1

Plug No.	Placement Method	Type Slurry	ID (in.)	MD Depths (ft)	Density (ppg)	Sacks	bbl
1	Balance plug	CO_2-resistant cement	5.474	420 to 840	14.8	78	18
2	Balance plug	CO_2-resistant cement	5.474	0 to 420	14.8	78	18

Note:

- All plug depths will be reviewed and adjusted, if needed, by Texas RRC prior to commencing plugging operations.

Table 9—Information on WW2 Intermediate Plugging

Plug No.	Placement Method	Type Slurry	ID (in.)	MD Depths (ft)	Density (ppg)	Sacks	bbl
1	Squeeze plug	CO_2-resistant cement	6.276	5,000 to 5,139	14.8	57	13
2	Balance plug	CO_2-resistant cement	6.276	4,980 to 5,000	14.8	3.5	1

Note:

- All plug depths will be reviewed and adjusted, if needed, by EPA and Texas RRC prior to commencing plugging operations.

Table 10—Information on Plugging WW2 at the End of Injection Period

Plug No.	Placement Method	Type Slurry	ID (in.)	MD Depths (ft)	Density (ppg)	Sacks	bbl
1	Squeeze plug	CO_2-resistant cement	6.276	4,400 to 4,980	14.8	236	55
2	Balance plug	CO_2-resistant cement	6.276	4,300 to 4,400	14.8	20	4.7
3	Balance plug	CO_2-resistant cement	6.276	4,058 to 4,158	14.8	20	4.7
4	Balance plug	CO_2-resistant cement	6.276	2,550 to 2,650	14.8	20	4.7
5	Balance plug	CO_2-resistant cement	6.276	1,750 to 1,850	14.8	20	4.7
6	Balance plug	CO_2-resistant cement	6.276	823 to 923	14.8	20	4.7
7	Balance plug	CO_2-resistant cement	6.276	0 to 475	14.8	85	20

Note:

- All plug depths will be reviewed and adjusted, if needed, by EPA and Texas RRC prior to commencing plugging operations.

Table 11—Information on Plugging WW1

Plug No.	Placement Method	Type Slurry	ID (in.)	MD Depths (ft)	Density (ppg)	Sacks	bbl
1	Squeeze plug	CO_2-resistant cement	6.276	4,300 to 5,012	14.8	290	68
2	Balance plug	CO_2-resistant cement	6.276	4,200 to 4,300	14.8	20	4.7
3	Balance plug	CO_2-resistant cement	6.276	3,915 to 4,015	14.8	20	4.7
4	Balance plug	CO_2-resistant cement	6.276	2,450 to 2,550	14.8	20	4.7
5	Balance plug	CO_2-resistant cement	6.276	1,750 to 1,850	14.8	20	4.7
6	Balance plug	CO_2-resistant cement	6.276	808 to 908	14.8	20	4.7
7	Balance plug	CO_2-resistant cement	6.276	0 to 475	14.8	85	20

Note:

- All plug depths will be reviewed and adjusted, if needed, by EPA and Texas RRC prior to commencing plugging operations.

Table 12—Information on Plugging WW3

Plug No.	Placement Method	Type Slurry	ID (in.)	MD Depths (ft)	Density (ppg)	Sacks	bbl
1	Squeeze plug	CO_2-resistant cement	6.276	4,300 to 5023	14.8	299	70
2	Balance plug	CO_2-resistant cement	6.276	4,200 to 4,300	14.8	20	4.7
3	Balance plug	CO_2-resistant cement	6.276	3,925 to 4,025	14.8	20	4.7
4	Balance plug	CO_2-resistant cement	6.276	2,450 to 2,550	14.8	20	4.7
5	Balance plug	CO_2-resistant cement	6.276	1,750 to 1,850	14.8	20	4.7
6	Balance plug	CO_2-resistant cement	6.276	739 to 839	14.8	20	4.7
7	Balance plug	CO_2-resistant cement	6.276	0 to 475	14.8	85	20

Note:

- All plug depths will be reviewed and adjusted, if needed, by EPA and Texas RRC prior to commencing plugging operations.

Table 13—Information on Plugging WW4

Plug No.	Placement Method	Type Slurry	ID (in.)	MD Depths (ft)	Density (ppg)	Sacks	bbl
1	Squeeze plug	CO_2-resistant cement	6.276	4,500 to 5,231	14.8	299	70
2	Balance plug	CO_2-resistant cement	6.276	4,400 to 4,500	14.8	20	4.7
3	Balance plug	CO_2-resistant cement	6.276	4,070 to 4,170	14.8	20	4.7
4	Balance plug	CO_2-resistant cement	6.276	2,575 to 2,675	14.8	20	4.7
5	Balance plug	CO_2-resistant cement	6.276	1,750 to 1,850	14.8	20	4.7
6	Balance plug	CO_2-resistant cement	6.276	806 to 906	14.8	20	4.7
7	Balance plug	CO_2-resistant cement	6.276	0 to 475	14.8	85	20

Note:

- All plug depths will be reviewed and adjusted, if needed, by EPA and Texas RRC prior to commencing plugging operations.

2.2 Monitor Wells: Plugging plans and schematics

2.2.1 Monitor SLR1 (Conversion from Shoe Bar 1 to SLR1)

The Shoe Bar 1 well was plugged below Upper Confining Zone in early 2025, prior to the commencement of CO_2 injection at the BRP Project site. The Shoe Bar 1, referred to as the

SLR1, will be used to monitor integrity of the Upper Confining Zone. In the post-injection period, SLR1 will be plugged and abandoned.

2.2.1.1 Conversion from Shoe Bar 1 to SLR1

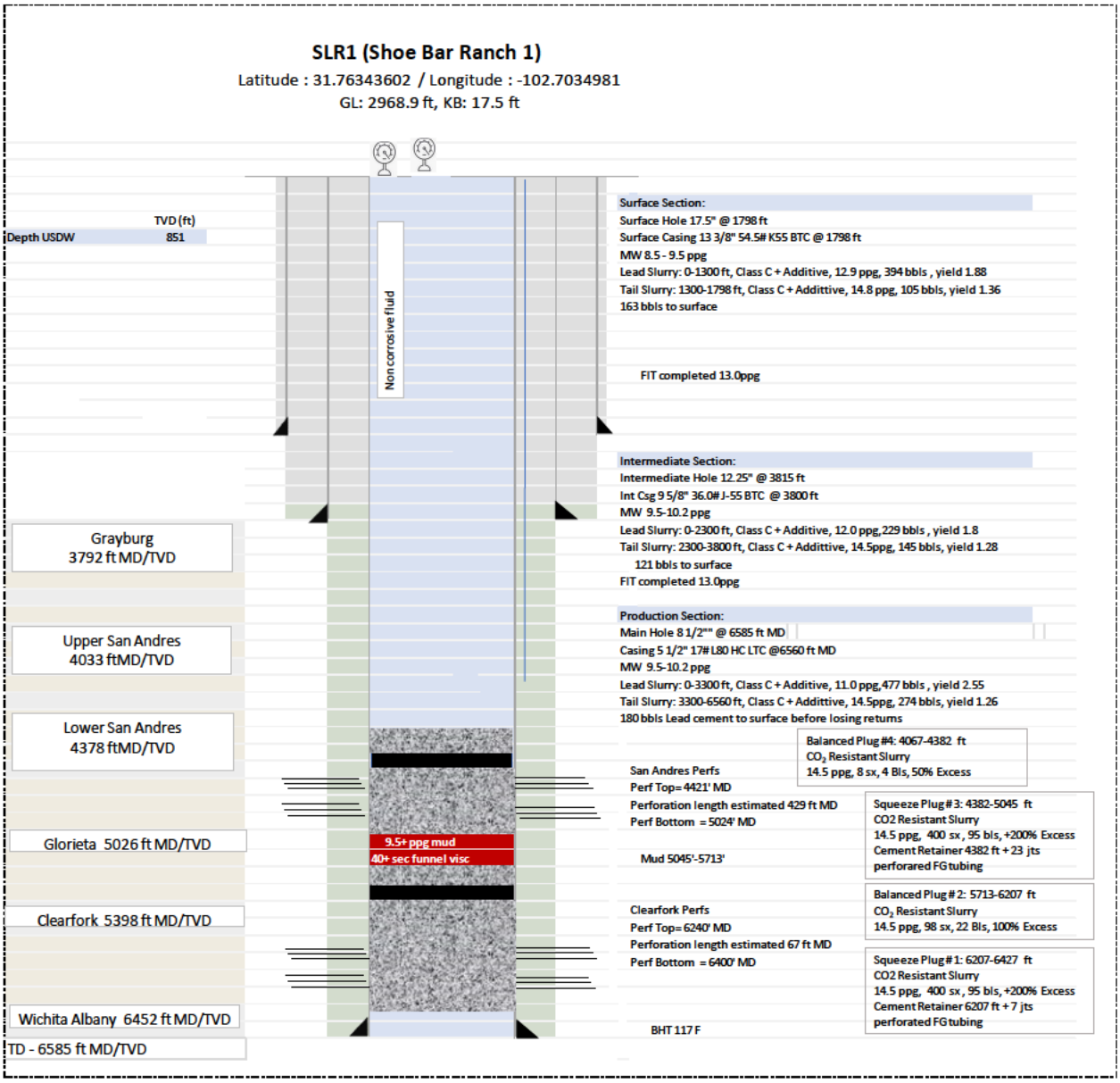


Figure 1—Convert the Shoe Bar 1 to the SLR1.

2.2.1.2 Plugging SLR1 in the post-injection period

[redacted]

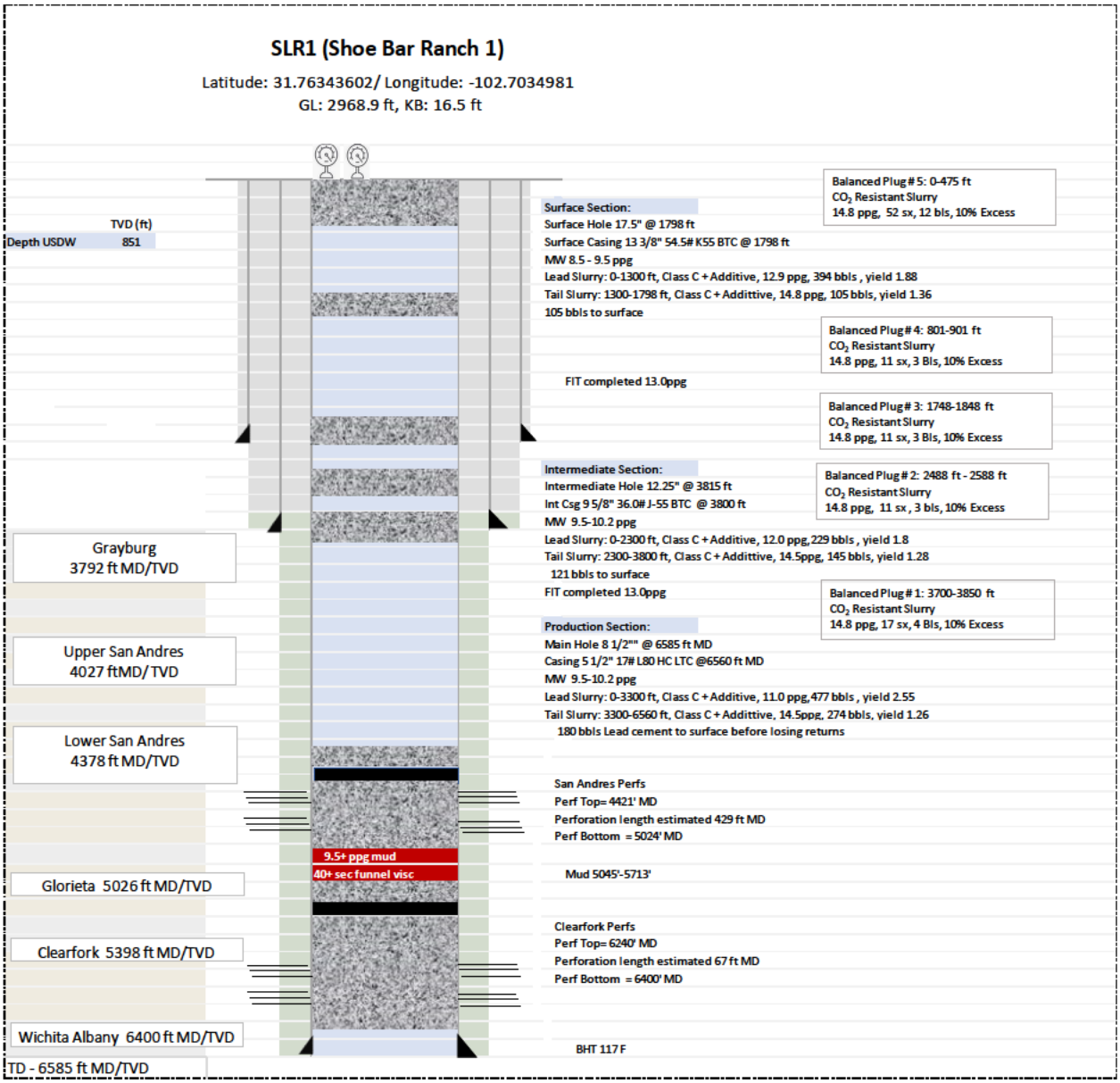
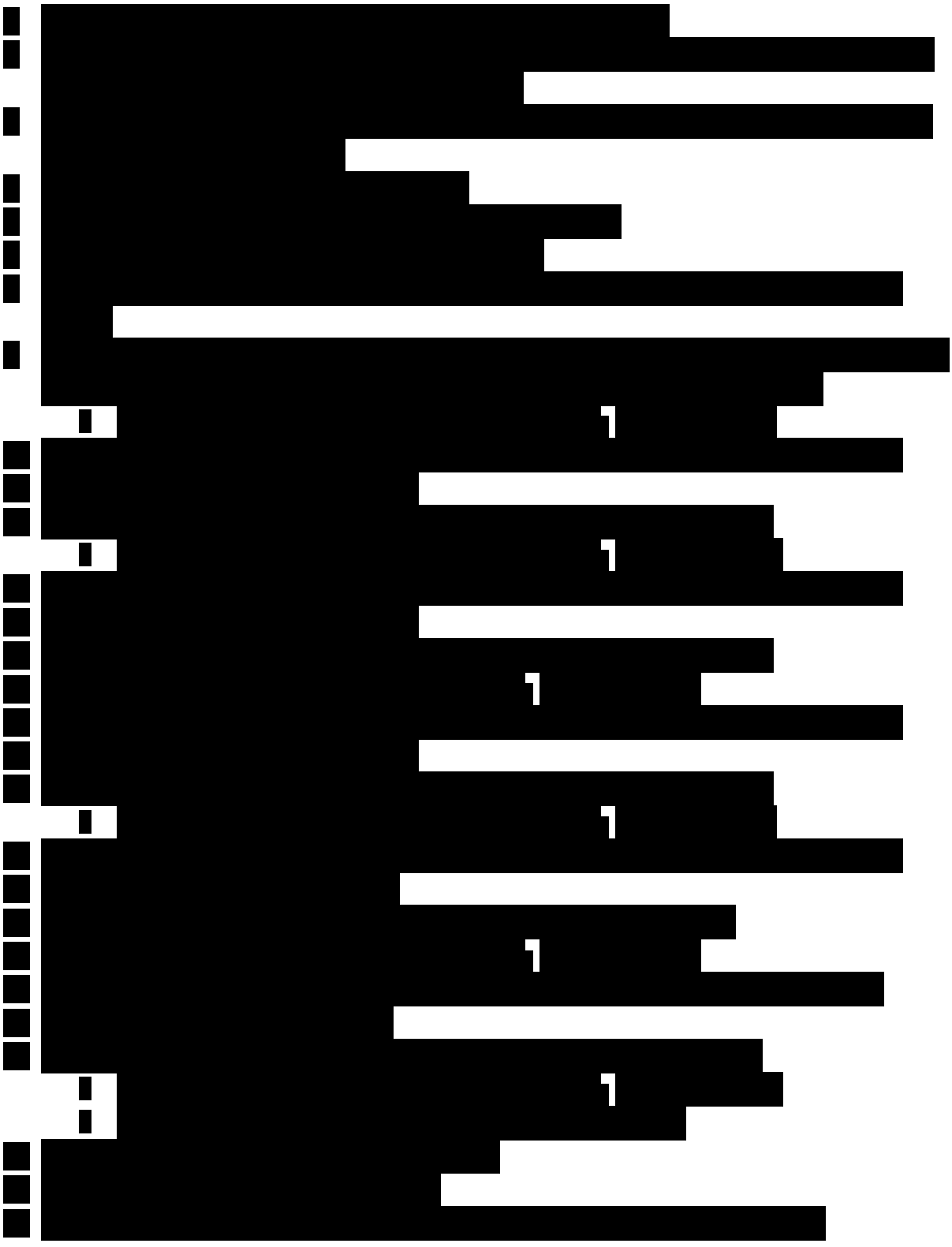


Figure 2--Plugging the SLR1 in the post-injection period.

2.2.2 Injection Zone monitor well SLR2

The proposed procedure for plugging Injection Zone monitoring well SLR2 is as follows.



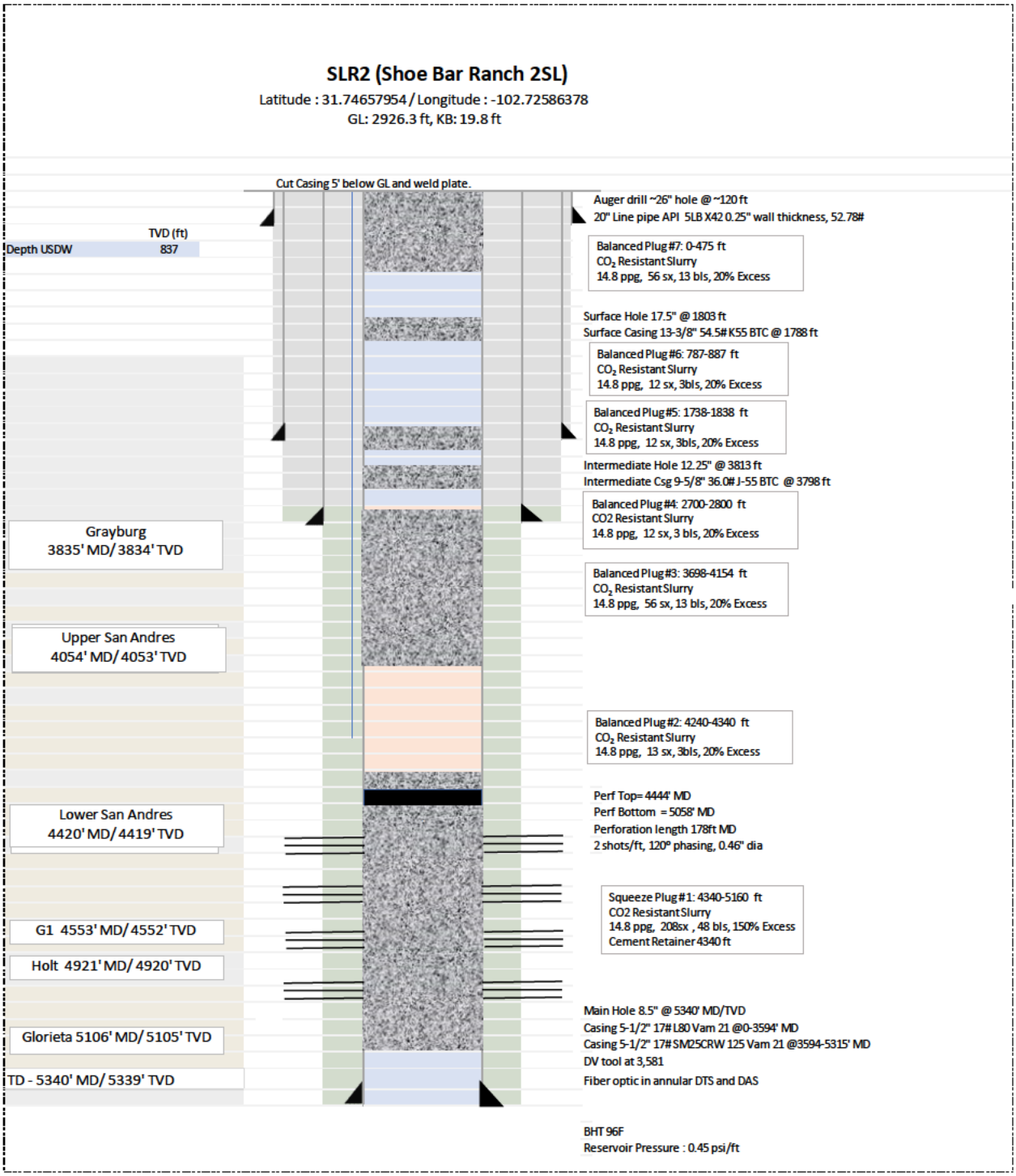
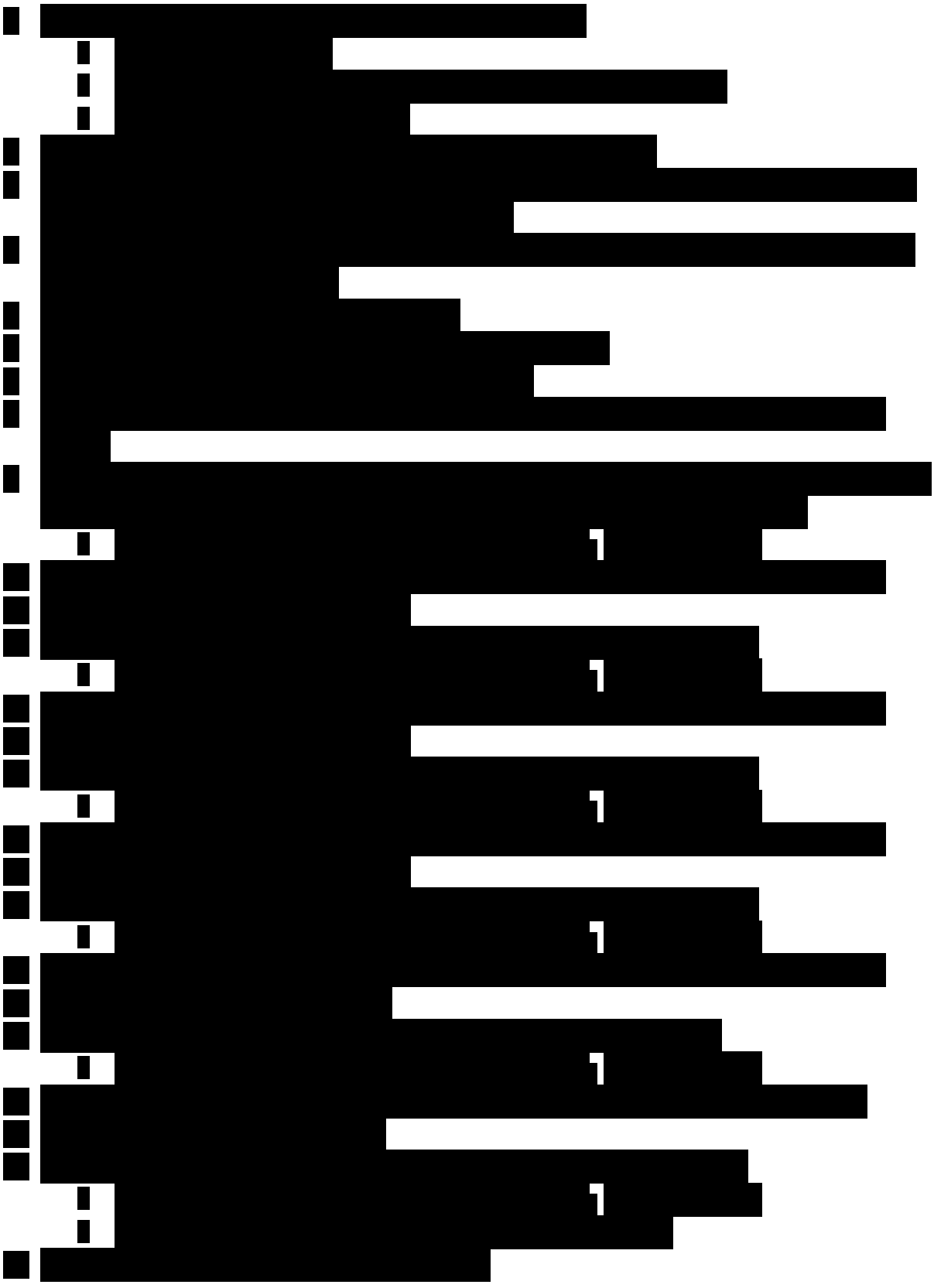


Figure 3—Plugging of the SLR2 during the post-injection period.

2.2.3 Injection Zone monitor well SLR3

The general procedure for plugging Injection Zone well SLR3 is as follows. Final procedures will be developed after this well has been drilled.



26. RD pulling unit and surface equipment.
27. Cut off wellhead 5’ BGL and weld on steel plate per regulatory requirements

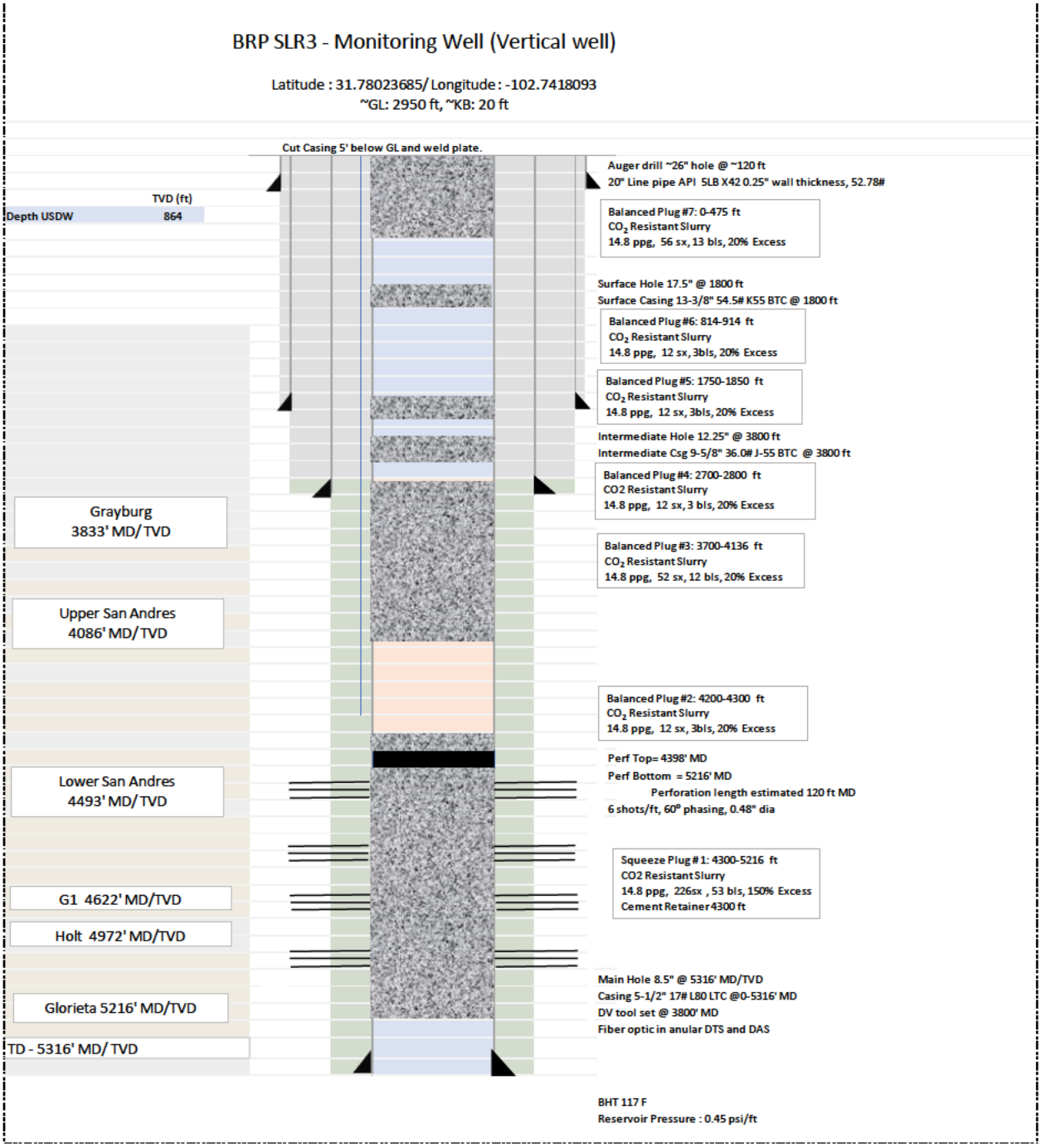
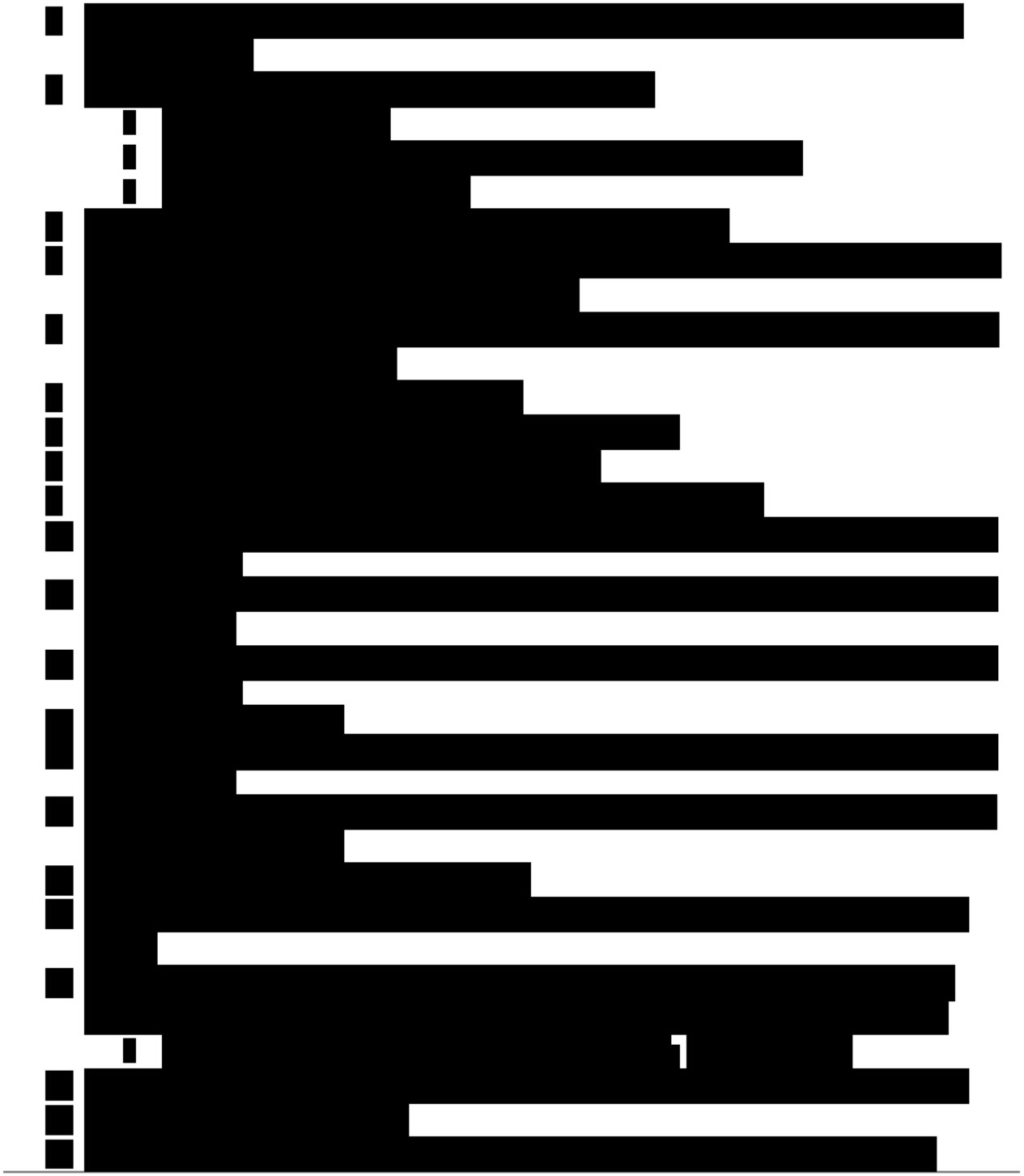


Figure 4—Plugging the SLR3 in the post-injection period.

2.2.4 Monitor ACZ1 (Conversion from Shoe Bar 1AZ)

The Shoe Bar 1AZ well was converted to the ACZ1 well to monitor integrity of the Upper Confining Zone prior to the commencement of CO_2 injection operations in the BRP CCS1 and BRP CCS2 wells. In the post-injection period, the ACZ1 will be plugged and abandoned.

2.1.4.1 Conversion from Shoe Bar 1AZ to ACZ1 monitor



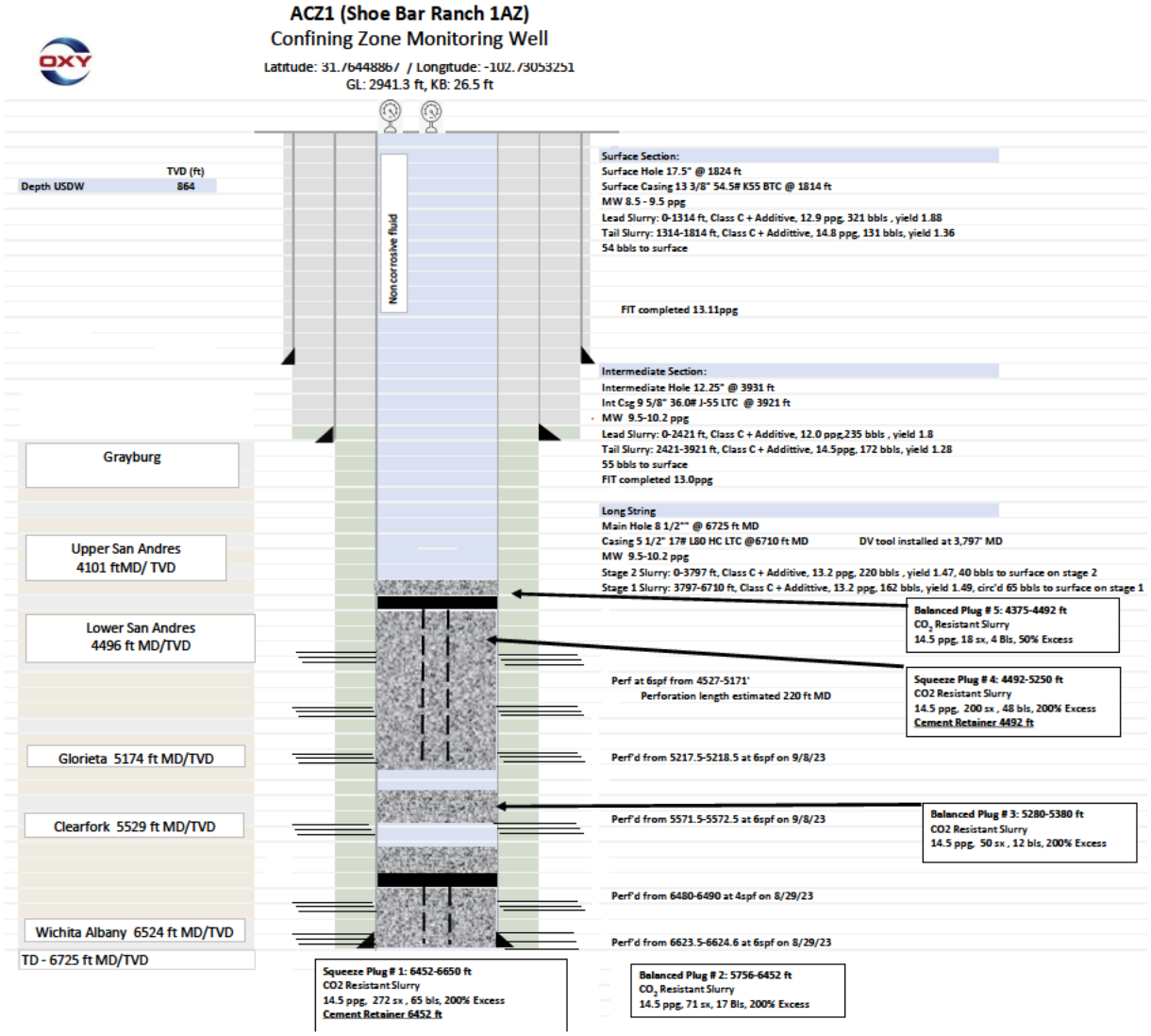


Figure 5--Plugging the Shoe Bar 1AZ to convert to the ACZ1 monitor well.

2.2.4.2 Plugging the ACZ1 in the post-injection period

[redacted]

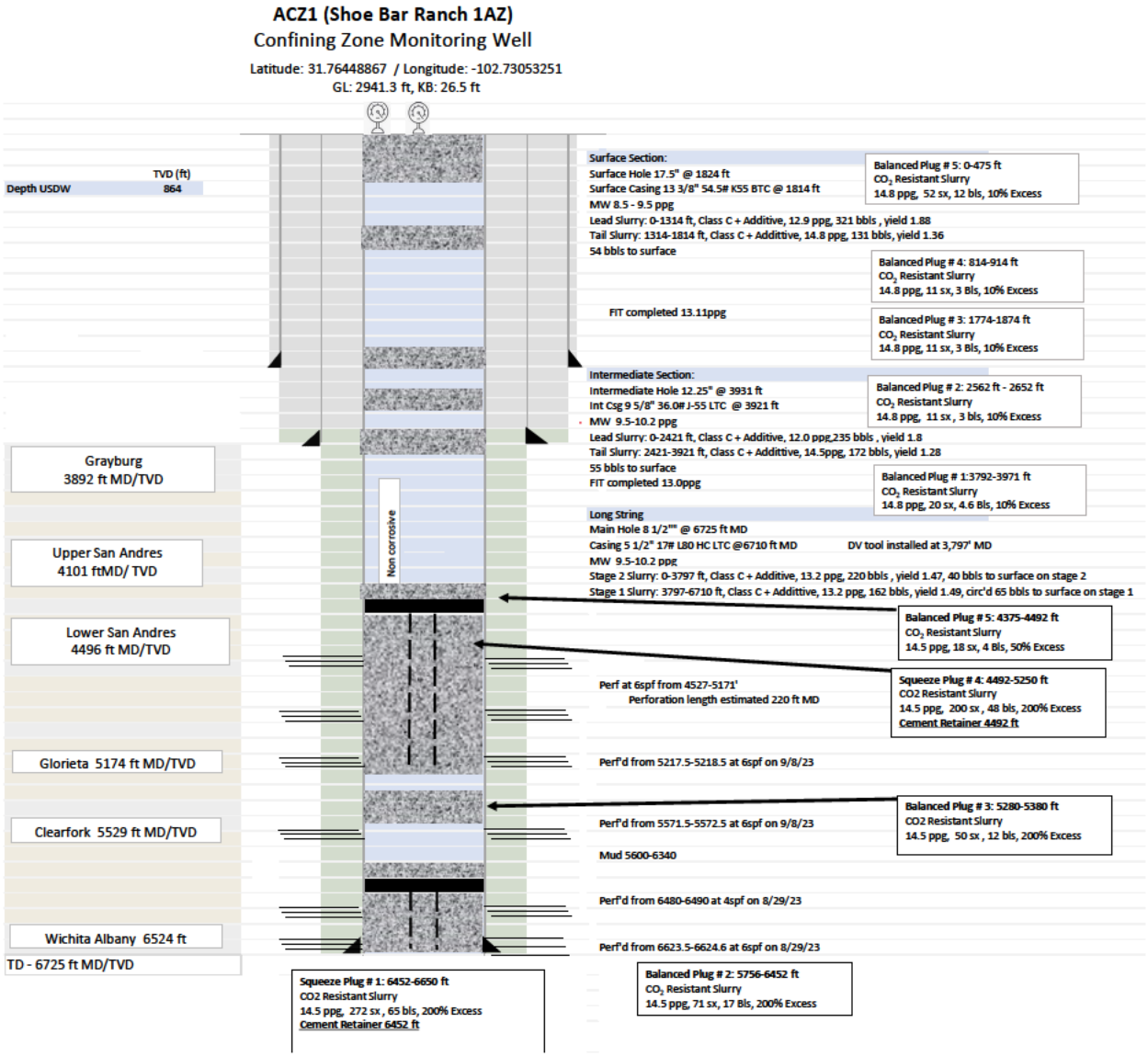


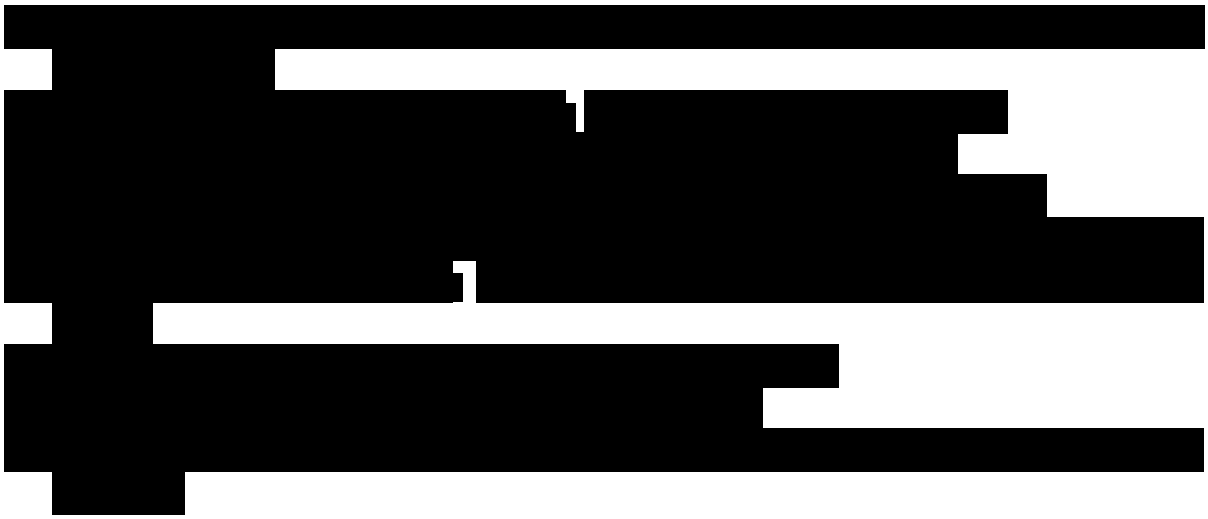
Figure 6--Plugging the ACZ1 in the post-injection period.

2.2.5 USDW Monitor well

The procedure for plugging the UDSW well is as follows.

This procedure has been developed with West Texas Water Well Services, a licensed Water Wells drilling company in Texas.

[redacted]



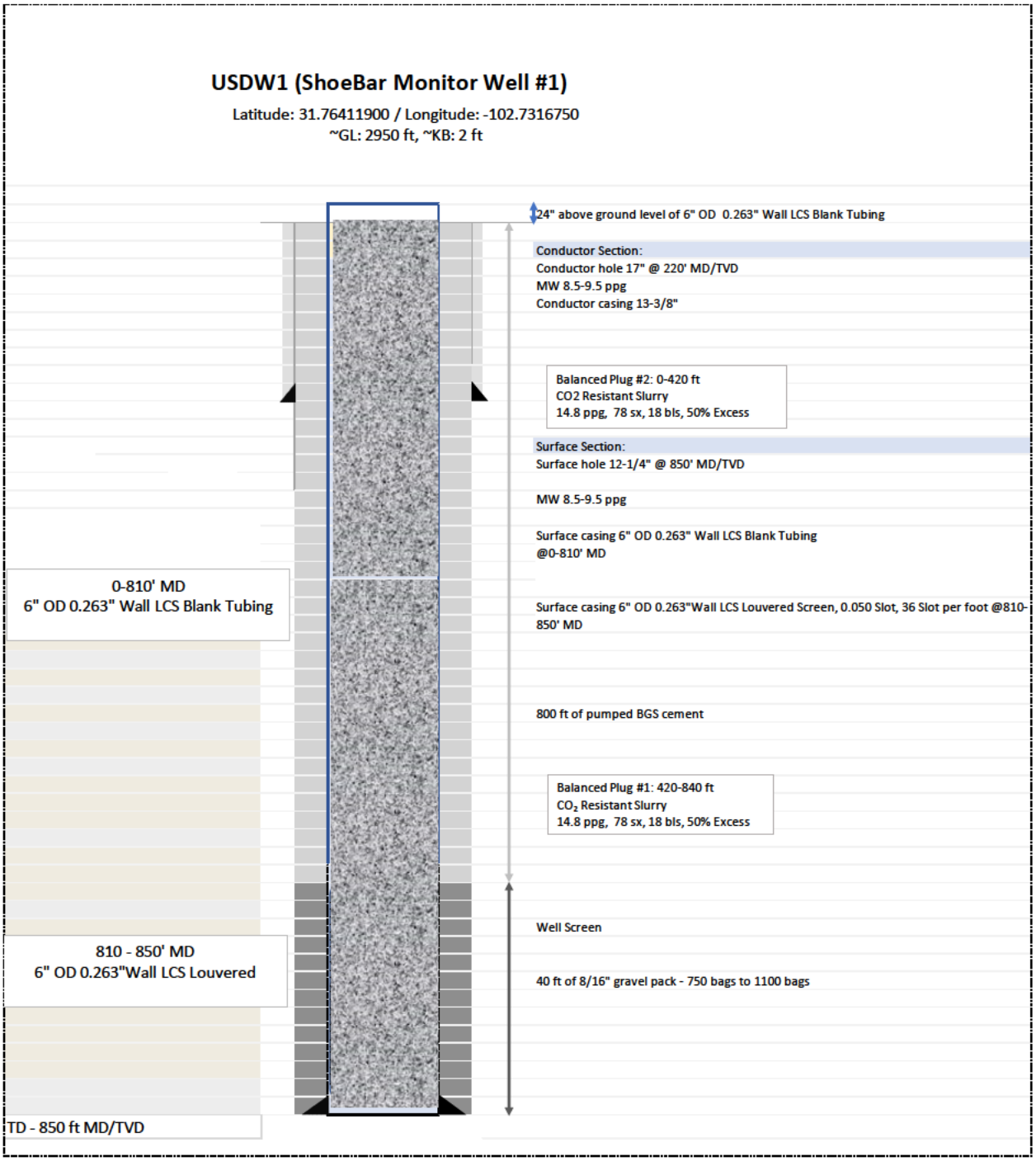


Figure 7--Plugging the USDW1 in the post-injection period.

2.3 Water Withdrawal wells (WW1, WW2, WW3, WW4): Plugging plans and schematics

Four brine production wells are planned to be drilled to manage pressure in the Lower San Andres Formation. These wells will be completed throughout the Lower San Andres formation. WW2 will be plugged in the Holt-sub-zone after approximately seven years following the

commencement of CO_2 injection. Perforations in the upper part of the Lower San Andres formation will be left open until final plugging.

2.3.1 Intermediate plugging of the WW2 well

1. [redacted]

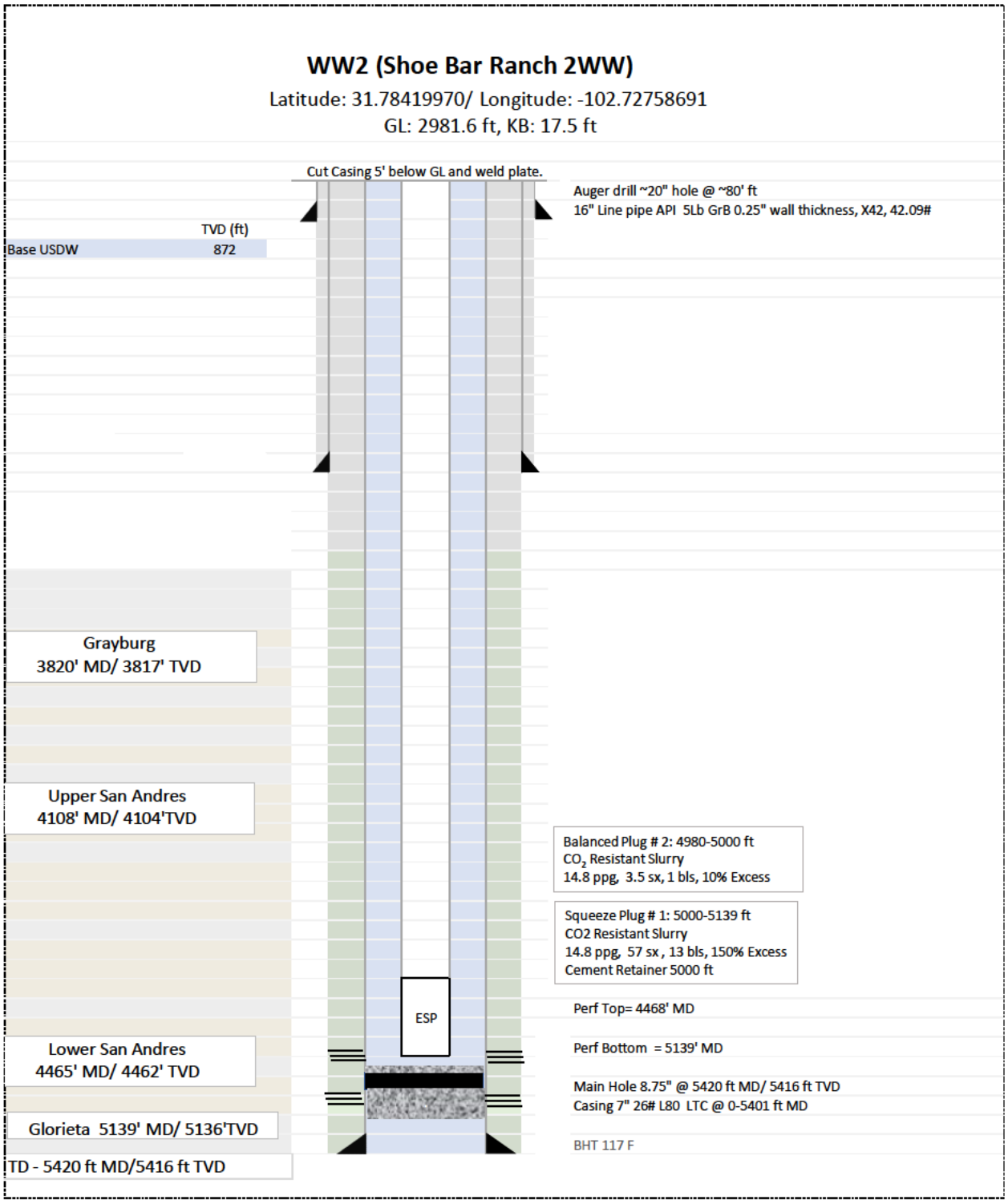


Figure 8—Intermediate plugging of WW2. Well will continue to produce brine from the upper part of the Lower San Andres

2.3.2 Final plugging of the WW2 well

1. [redacted]

27. [redacted]

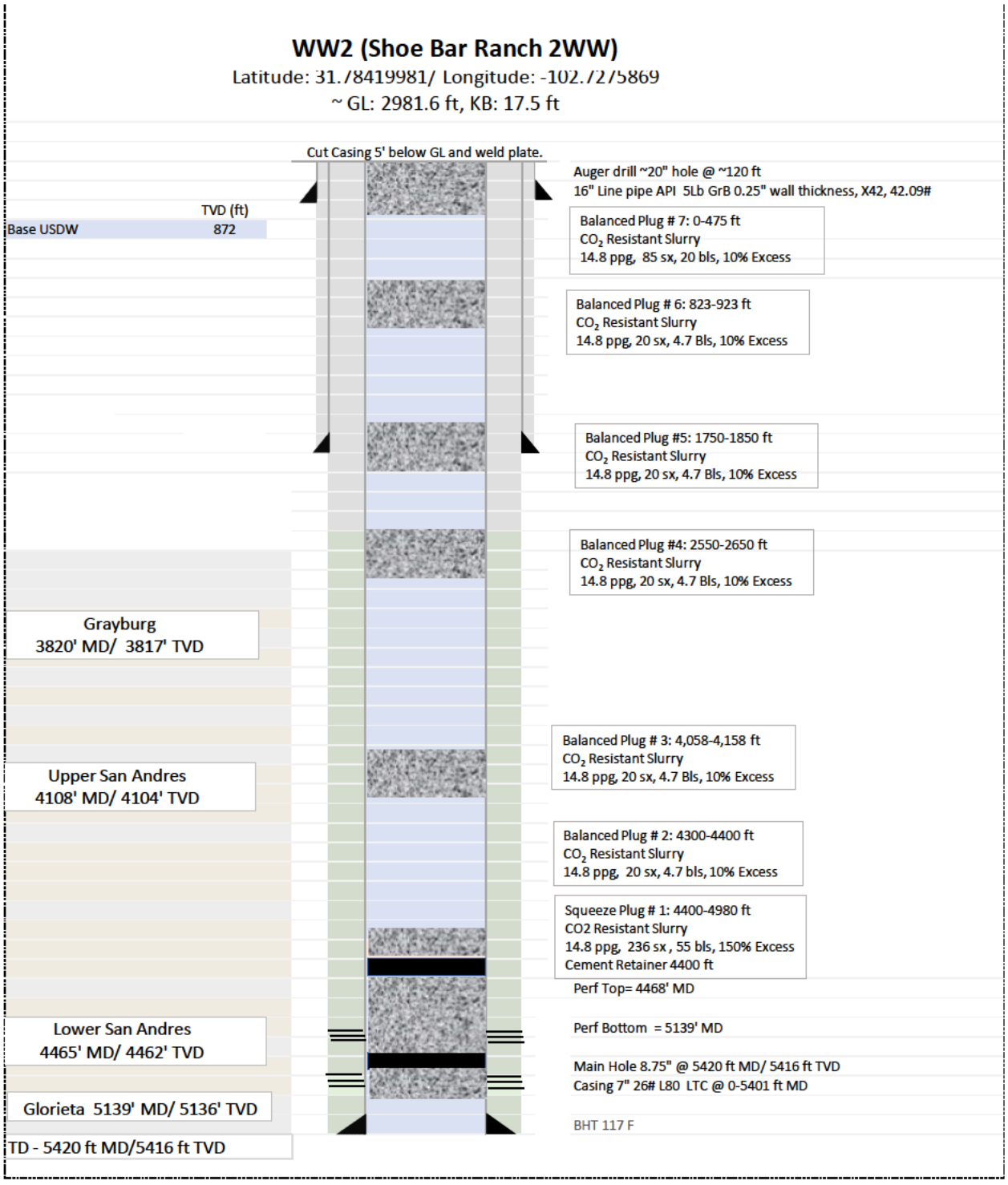


Figure 9—Final plugging of WW2.

2.3.3 Plugging of the WW1 well

The procedure for plugging WW1 is as follows.

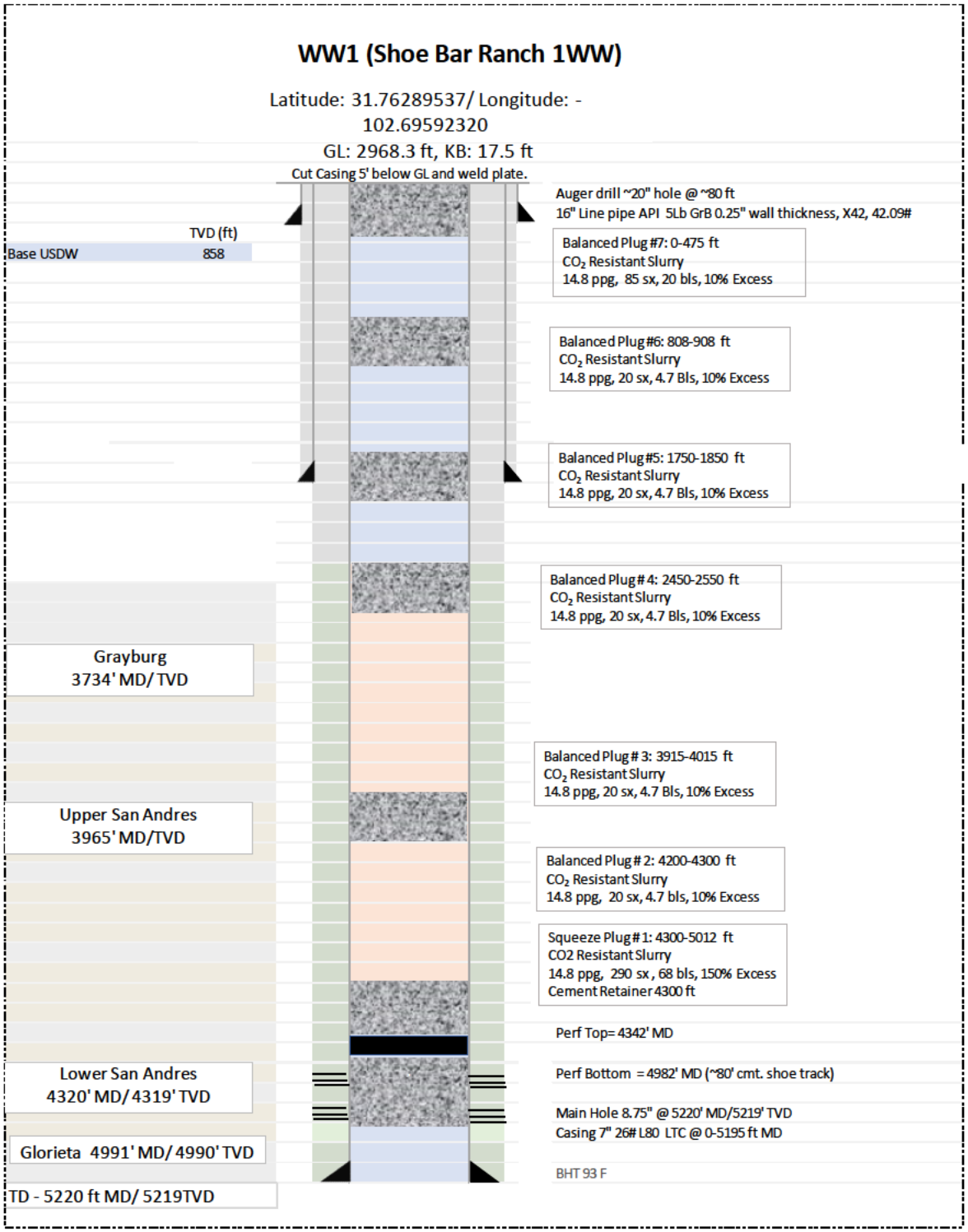


Figure 10—Representative wellbore diagram after plugging WW1.

2.3.4 Plugging of the WW3 Well

The procedure for plugging WW3 is as follows.

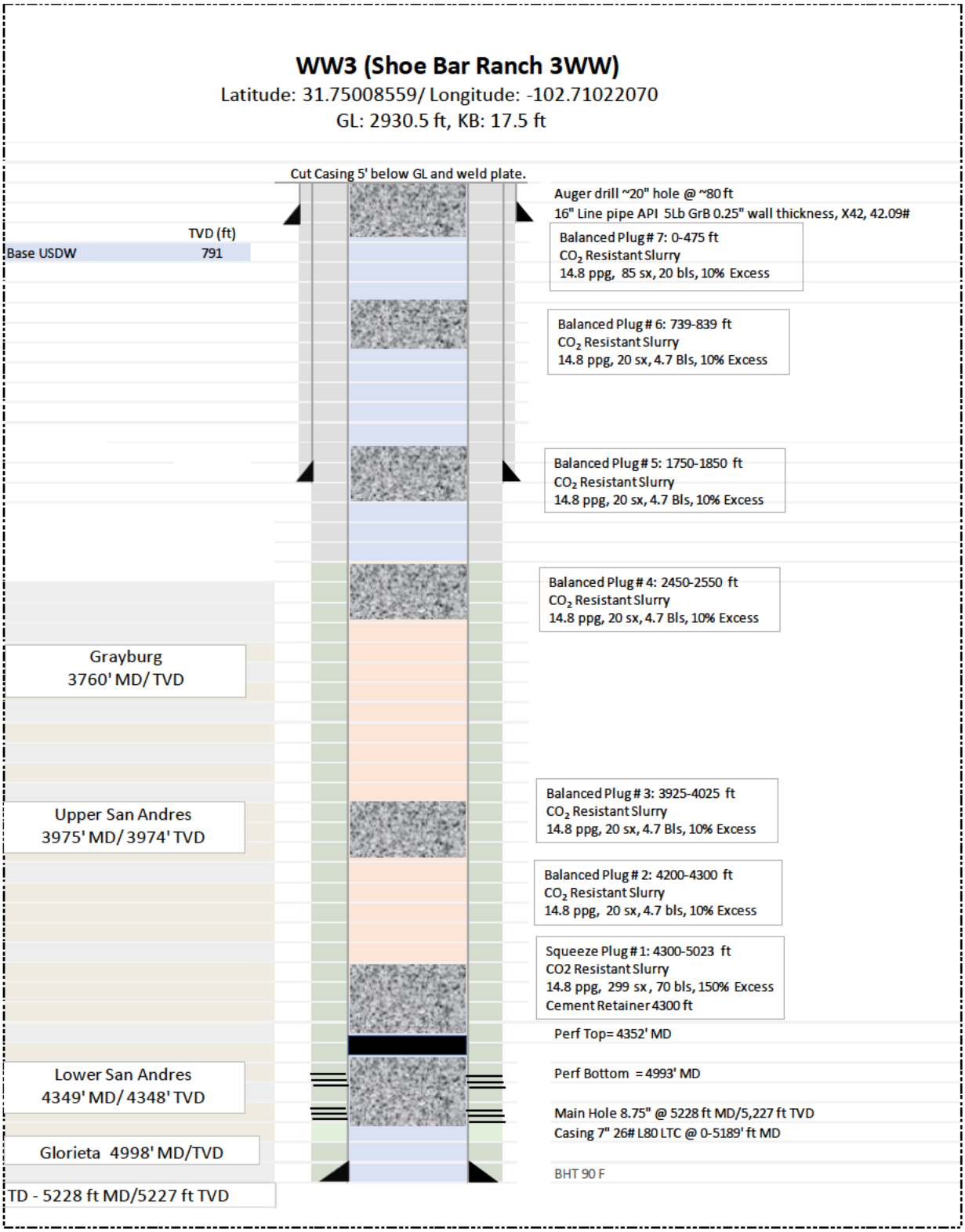


Figure 11—Representative wellbore diagram after plugging WW3.

2.3.5 Plugging of the WW4 Well

The procedure for plugging WW4 is as follows.

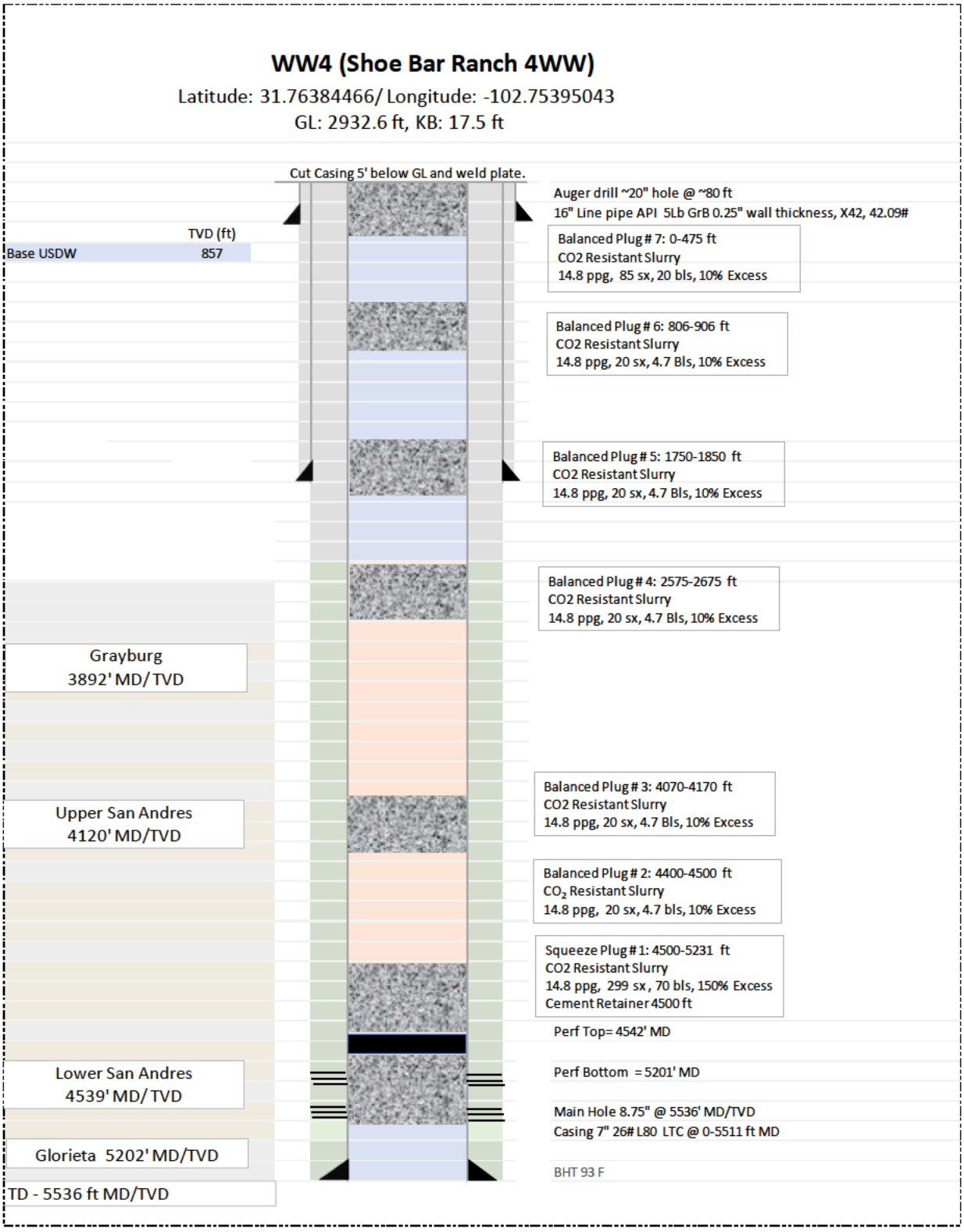


Figure 12—Representative wellbore diagram after plugging WW4.