

Office
 District I – (575) 393-6161
 1625 N. French Dr., Hobbs, NM 88240
 District II – (575) 748-1283
 811 S. First St., Artesia, NM 88210
 District III – (505) 334-6178
 1000 Rio Brazos Rd., Aztec, NM 87410
 District IV – (505) 476-3460
 1220 S. St. Francis Dr., Santa Fe, NM
 87505

State of New Mexico
 Energy, Minerals and Natural Resources

Form C-103
 Revised July 18, 2013

OIL CONSERVATION DIVISION
 1220 South St. Francis Dr.
 Santa Fe, NM 87505

WELL API NO. 30-015-48886
5. Indicate Type of Lease STATE ☐ FEE ☒
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name Brainard 11
8. Well Number 3H
9. OGRID Number 330211
10. Pool name or Wildcat Red Lake; Glorieta-Yeso

SUNDRY NOTICES AND REPORTS ON WELLS
 (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well ☒ Gas Well ☐ Other

2. Name of Operator
Redwood Operating LLC

3. Address of Operator
P.O. Box 1370 Artesia, NM 88211-1370

4. Well Location

Unit Letter D: 485 feet from the North line and 575 feet from the West line

Section 12 Township 18S Range 26E NMPM County Eddy

11. Elevation (Show whether DR, RKB, RT, GR, etc.)
3283' GR

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
 TEMPORARILY ABANDON ☐ CHANGE PLANS ☐
 PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐
 DOWNHOLE COMMINGLE ☐
 CLOSED-LOOP SYSTEM ☐
 OTHER: Move BHL & casing change ☒

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
 COMMENCE DRILLING OPNS. ☐ P AND A ☐
 CASING/CEMENT JOB ☐
 OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Redwood Operating requests the following changes to the Brainard 11 3H APD:

BHL location has changed. New horizontal plan attached.

Production casing – Drill 8 3/4" hole to 8590', run 7" 26# L-80 LT&C from 0-2150'. 7' 26# L-80 BT&C from 2150-3250'.
 5 1/2" 17# L-80 BT&C from 3250-8590'. Cement w/ lead 375 sx 35/65 Perlite C, tail 1525sx PVL.

Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Delilah Flores TITLE Regulatory Technician I DATE 2/17/2022

Type or print name Delilah Flores E-mail address: regulatory@redwoodoperating.com PHONE: 575-748-1288

For State Use Only

APPROVED BY: John Garcia TITLE Petroleum Engineer DATE 6/9/2022

Conditions of Approval (if any):

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office
☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-48886	² Pool Code 51120	³ Pool Name Red Lake; Glorieta-Yeso
⁴ Property Code 299527	⁵ Property Name BRAINARD 11	⁶ Well Number 3H
⁷ OGRID No. 330211	⁸ Operator Name REDWOOD OPERATING, LLC	⁹ Elevation 3282.7

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	12	18 S	26 E		485	NORTH	575	WEST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	11	18 S	26 E		330	NORTH	1	WEST	EDDY

¹² Dedicated Acres 160	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Delilah Flores</i> 2/16/2022 Signature Date Delilah Flores Printed Name regulatory@redwoodoperating.com E-mail Address		18 SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. JANUARY 20, 2022 Date of Survey <i>ALIMON F. JARAMILLO</i> Signature and Seal of Professional Surveyor Certificate Number: LS 12797 SURV. NO. 8955A	
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Intent ☐ As Drilled ☐

API #		
Operator Name: REDWOOD OPERATING, LLC	Property Name: BRAINARD 11	Well Number 3H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

First Take Point (FTP)

UL A	Section 11	Township 18S	Range 26E	Lot	Feet 330	From N/S NORTH	Feet 100	From E/W EAST	County EDDY
Latitude 32.7688132					Longitude 104.3441492				NAD 83

Last Take Point (LTP)

UL D	Section 11	Township 18S	Range 26E	Lot	Feet 330	From N/S NORTH	Feet 100	From E/W WEST	County EDDY
Latitude 32.7688875					Longitude 104.3607512				NAD 83

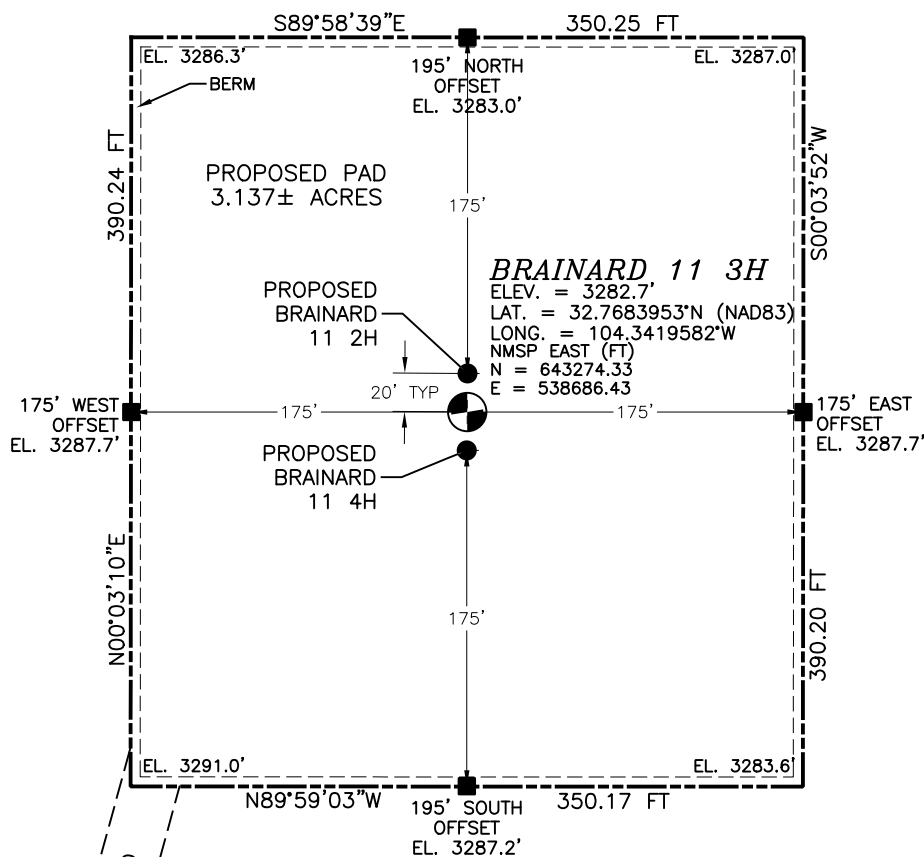
Is this well the defining well for the Horizontal Spacing Unit? ☐Is this well an infill well? ☐

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #		
Operator Name:	Property Name:	Well Number

KZ 06/29/2018

SECTION 12, TOWNSHIP 18 SOUTH, RANGE 26 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF ST. HWY. 229 (HALDEMAN) AND CO. RD. 46 (AARON) GO EAST ON CO. RD. 46 APPROX. 0.47 OF A MILE TO BEGINNING OF 20' CALICHE LEASE ROAD, CONTINUE EAST ON 20' CALICHE ROAD APPROX. 0.24 OF A MILE, CONTINUE NORTH ON 15' CALICHE ROAD APPROX. 0.24 MILES, CONTINUE EAST APPROX. 0.24 MILES, CONTINUE NORTHEAST ON 10' CALICHE ROAD APPROX. 0.367' TO SOUTHWEST CORNER OF AN EXISTING PAD, FROM BEGIN ROAD SURVEY AT THE NORTHEAST PAD CORNER FOLLOW ROAD SURVEY NORTHEAST APPROX. 275' TO THE SOUTHWEST PAD CORNER FOR THIS LOCATION.

I, FILIMON F. JARAMILLO, A NEW MEXICO LICENSED PROFESSIONAL SURVEYOR CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND I AM NOT PROVIDING ANY MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

FILIMON F. JARAMILLO, PLS. 7987

MADRON SURVEYING, INC.

301 SOUTH CANAL
(575) 234-3341

REDWOOD OPERATING, LLC
BRAINARD 11 3H

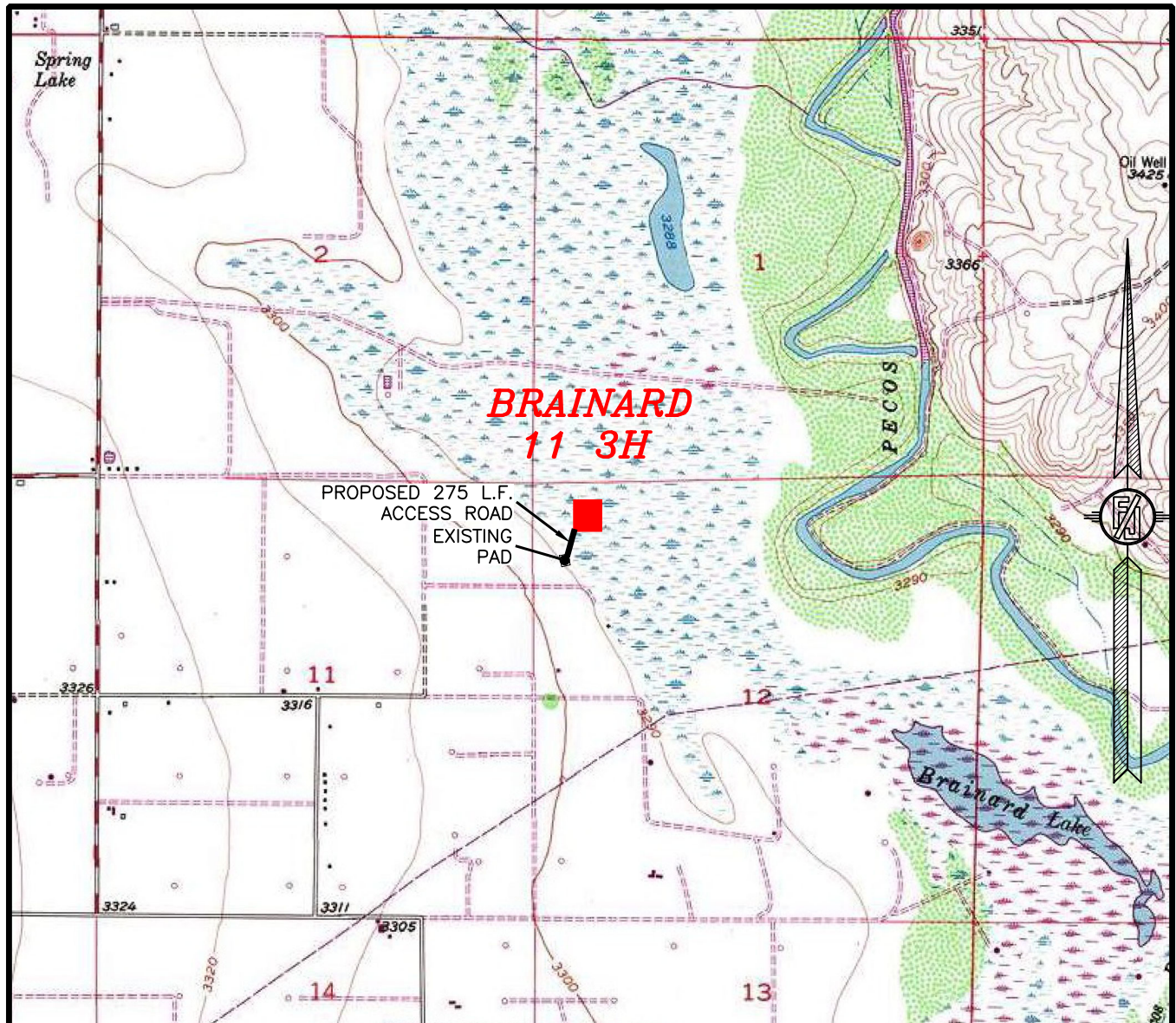
LOCATED 485 FT. FROM THE NORTH LINE
AND 575 FT. FROM THE WEST LINE OF
SECTION 12, TOWNSHIP 18 SOUTH,
RANGE 26 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JANUARY 20, 2022

SURVEY NO. 8955A

CARLSBAD, NEW MEXICO

SECTION 12, TOWNSHIP 18 SOUTH, RANGE 26 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 LOCATION VERIFICATION MAP



USGS QUAD MAP:
 SPRING LAKE

NOT TO SCALE

REDWOOD OPERATING, LLC
BRAINARD 11 3H
 LOCATED 485 FT. FROM THE NORTH LINE
 AND 575 FT. FROM THE WEST LINE OF
 SECTION 12, TOWNSHIP 18 SOUTH,
 RANGE 26 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

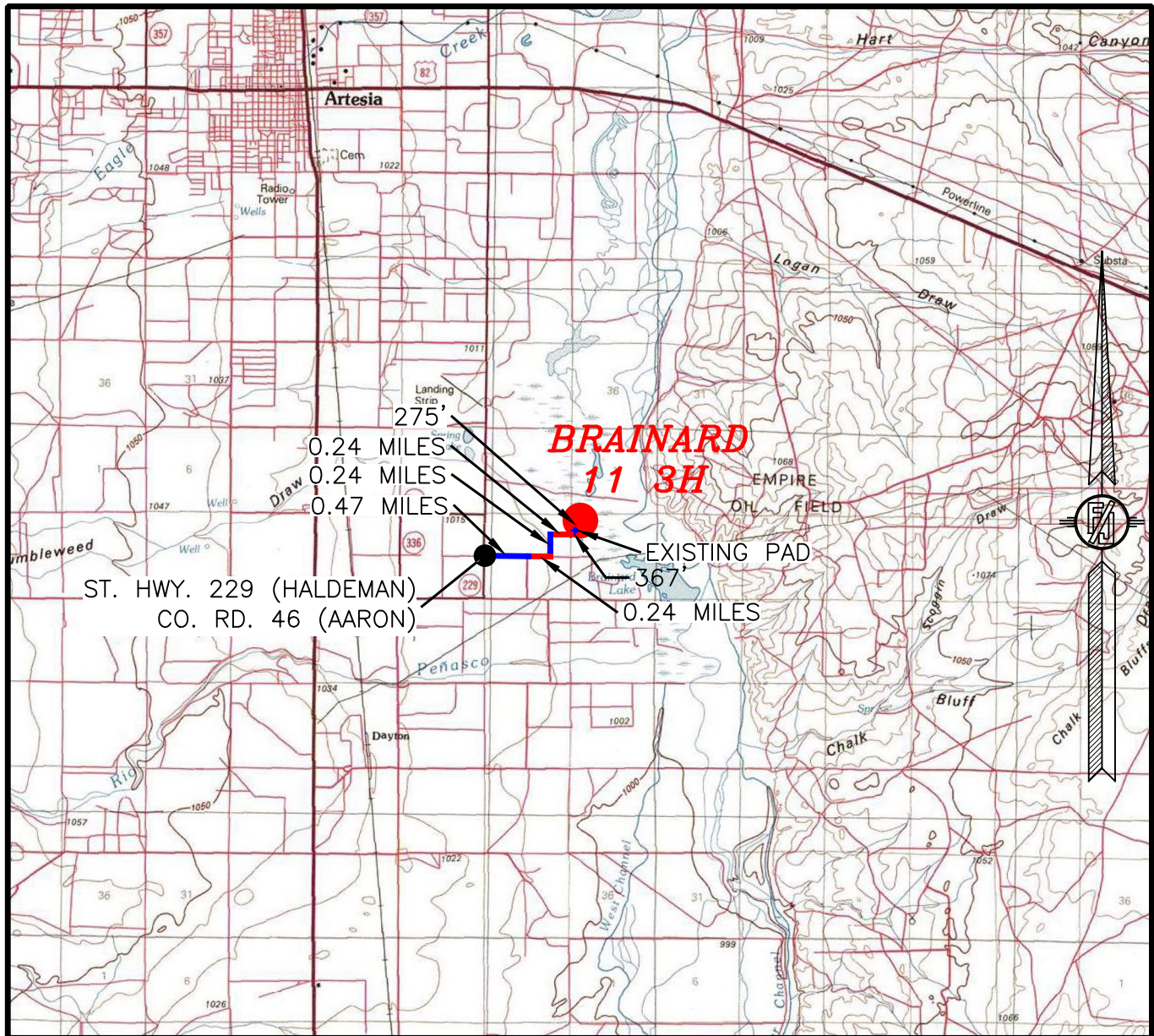
JANUARY 20, 2022

MADRON SURVEYING, INC.

301 SOUTH CANAL
 (575) 234-3341

SURVEY NO. 8955A
 CARLSBAD, NEW MEXICO

SECTION 12, TOWNSHIP 18 SOUTH, RANGE 26 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF ST. HWY. 229 (HALDEMAN) AND CO. RD. 46 (AARON) GO EAST ON CO. RD. 46 APPROX. 0.47 OF A MILE TO BEGINNING OF 20' CALICHE LEASE ROAD, CONTINUE EAST ON 20' CALICHE ROAD APPROX. 0.24 OF A MILE, CONTINUE NORTH ON 15' CALICHE ROAD APPROX. 0.24 MILES, CONTINUE EAST APPROX. 0.24 MILES, CONTINUE NORTHEAST ON 10' CALICHE ROAD APPROX. 367' TO SOUTHWEST CORNER OF AN EXISTING PAD, FROM BEGIN ROAD SURVEY AT THE NORTHEAST PAD CORNER FOLLOW ROAD SURVEY NORTHEAST APPROX. 275' TO THE SOUTHWEST PAD CORNER FOR THIS LOCATION.

REDWOOD OPERATING, LLC
BRAINARD 11 3H
 LOCATED 485 FT. FROM THE NORTH LINE
 AND 575 FT. FROM THE WEST LINE OF
 SECTION 12, TOWNSHIP 18 SOUTH,
 RANGE 26 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

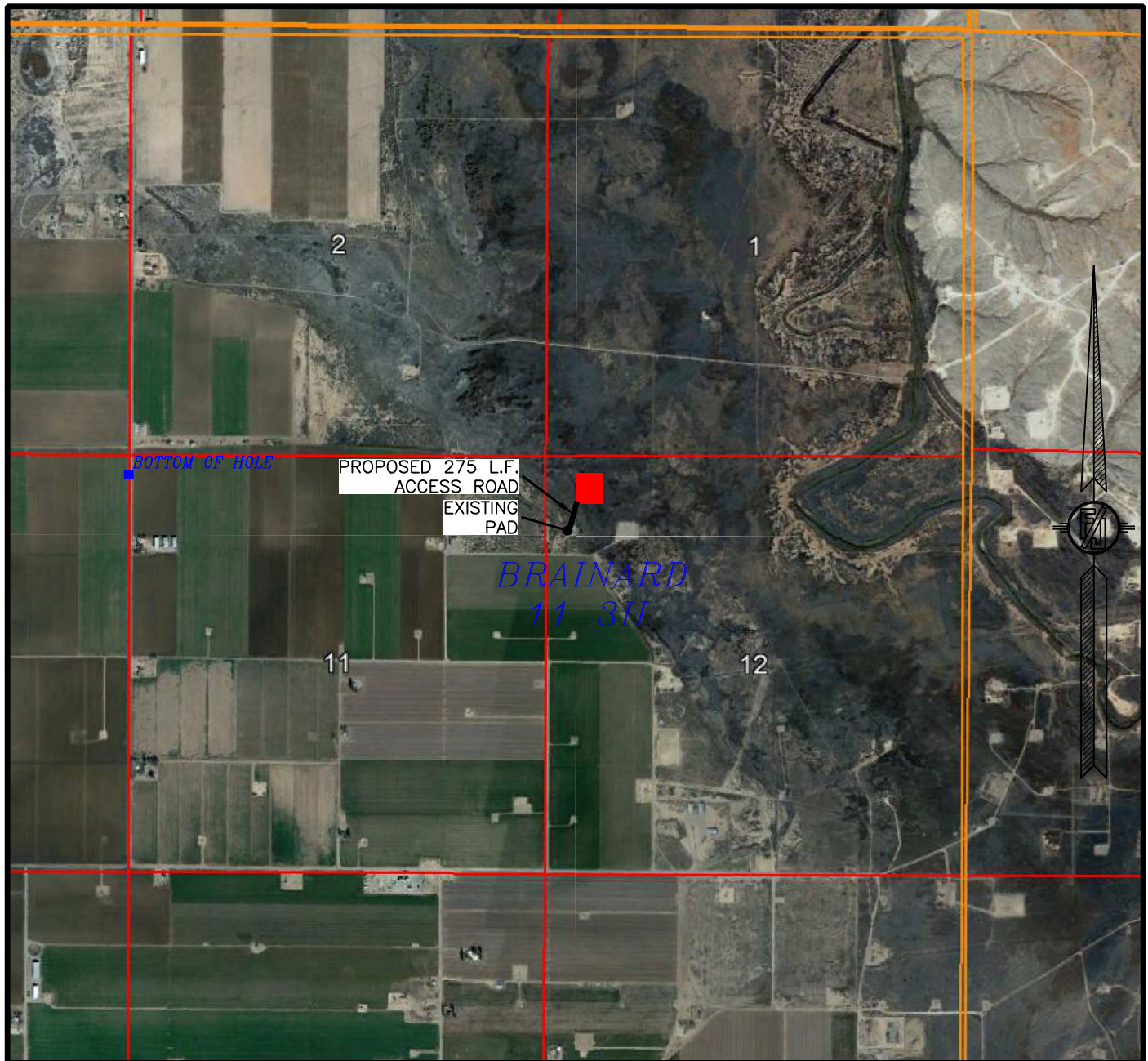
JANUARY 20, 2022

MADRON SURVEYING, INC.

301 SOUTH CANAL
(575) 234-3341

SURVEY NO. 8955A
 CARLSBAD, NEW MEXICO

SECTION 12, TOWNSHIP 18 SOUTH, RANGE 26 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 AERIAL PHOTO



NOT TO SCALE
 AERIAL PHOTO:
 GOOGLE EARTH
 DEC. 2019

REDWOOD OPERATING, LLC
BRAINARD 11 3H
 LOCATED 485 FT. FROM THE NORTH LINE
 AND 575 FT. FROM THE WEST LINE OF
 SECTION 12, TOWNSHIP 18 SOUTH,
 RANGE 26 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

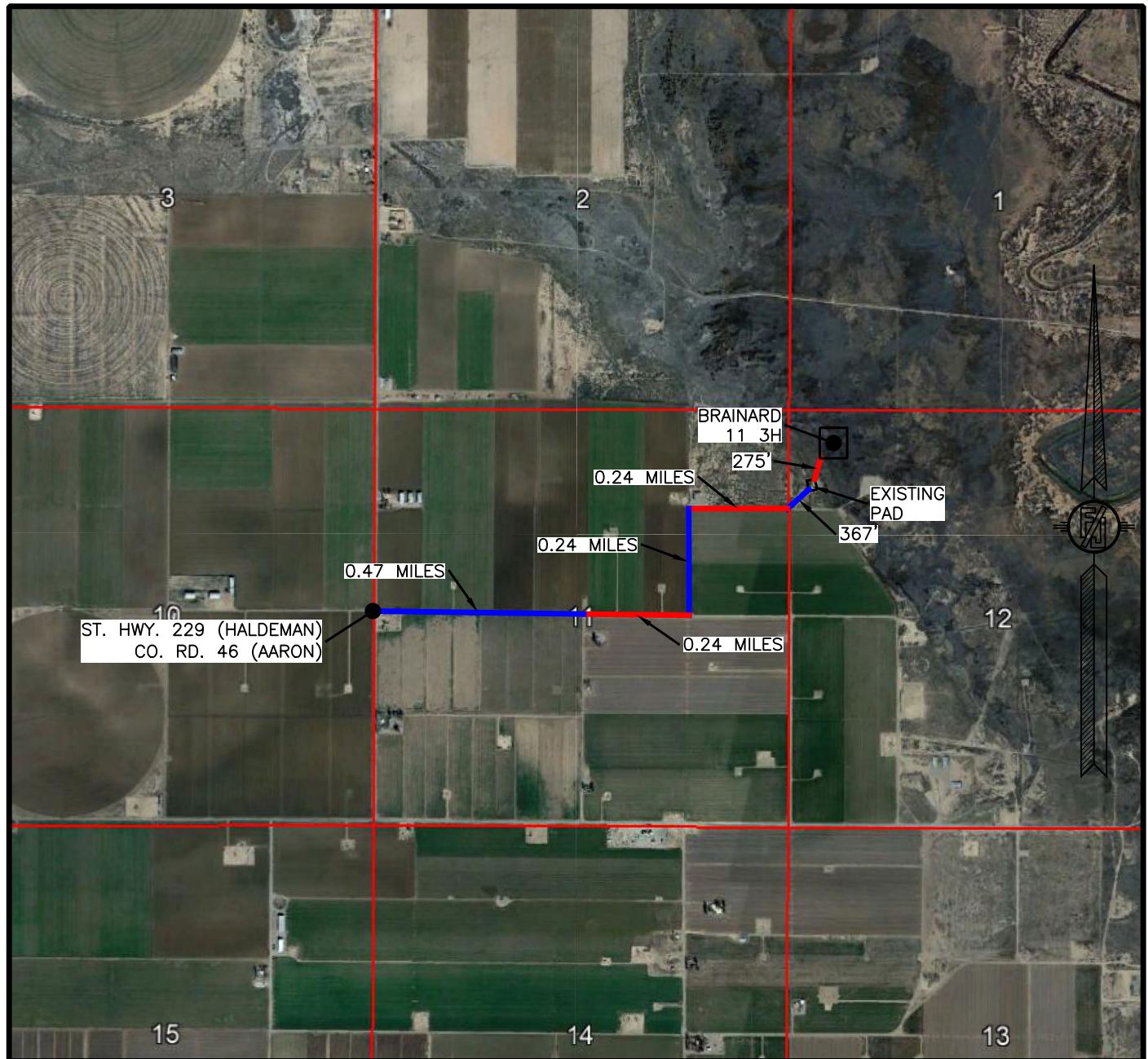
JANUARY 20, 2022

MADRON SURVEYING, INC.

301 SOUTH CANAL
 (575) 234-3341

SURVEY NO. 8955A
 CARLSBAD, NEW MEXICO

SECTION 12, TOWNSHIP 18 SOUTH, RANGE 26 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 AERIAL ACCESS ROUTE MAP



NOT TO SCALE
 AERIAL PHOTO:
 GOOGLE EARTH
 DEC. 2019

REDWOOD OPERATING, LLC
BRAINARD 11 3H
 LOCATED 485 FT. FROM THE NORTH LINE
 AND 575 FT. FROM THE WEST LINE OF
 SECTION 12, TOWNSHIP 18 SOUTH,
 RANGE 26 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

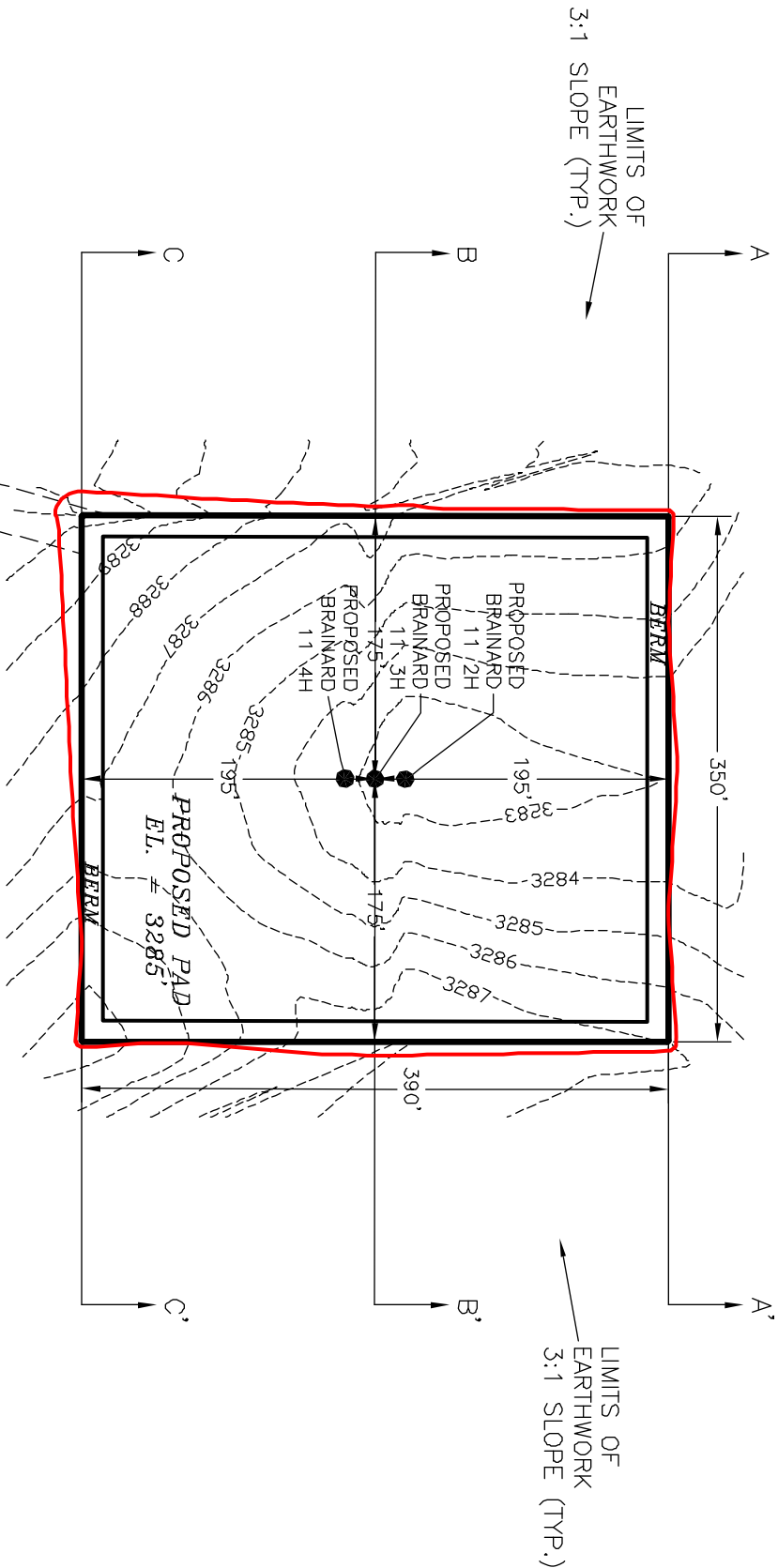
JANUARY 20, 2022

MADRON SURVEYING, INC.

301 SOUTH CANAL
 (575) 234-3341

SURVEY NO. 8955A
 CARLSBAD, NEW MEXICO

PLAN VIEW



I, FILMON F. JARAMILA, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT THE FOREGOING IS A TRUE AND CORRECT REPRESENTATION OF THE SURVEY, THAT THE SURVEYING INSTRUMENTS AND METHODS USED IN THIS SURVEY, TO THE BEST OF MY KNOWLEDGE AND BELIEF, COMPLY WITH THE STANDARDS FOR SURVEYING IN NEW MEXICO.

REDWOOD OPERATING, LLC
PAD GRADING AND CROSS SECTIONS
FOR BRAINARD 11 3H
SECTION 12, TOWNSHIP 18 SOUTH,
RANGE 26 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

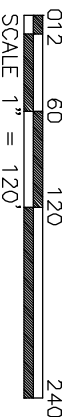
JANUARY 20, 2022

301 SOUTH CANAL
(979) 234-3341

CARLSBAD, NEW MEXICO

SURVEY NO. 8955A

SHEET 1-2

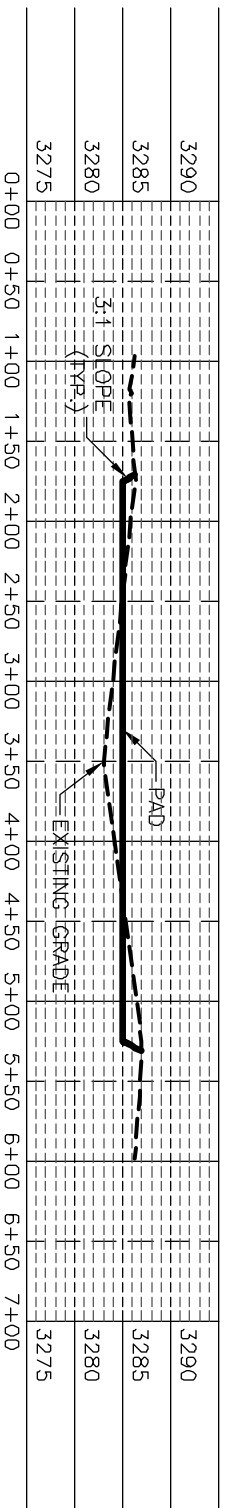


CUT	FILL	NET
4797 CU. YD	2149 CU. YD	2648 CU. YD (CUT)

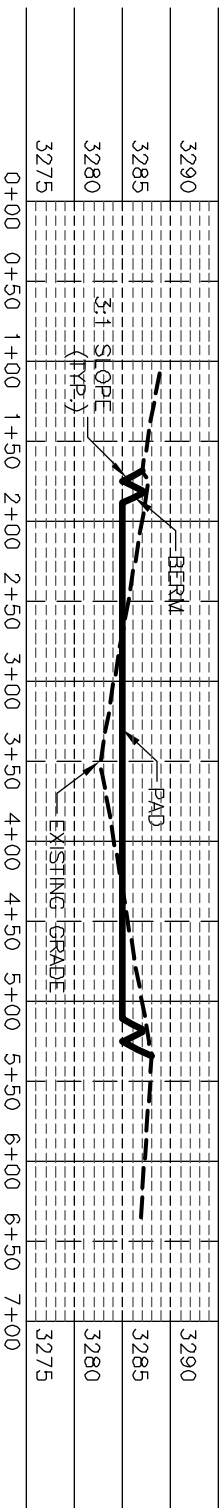
EARTHWORK QUANTITIES ARE ESTIMATED

CROSS-SECTIONS

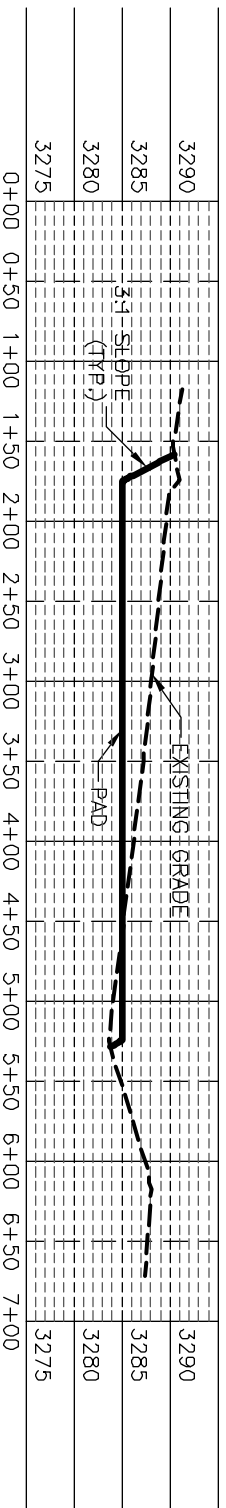
SECTION A-A'



SECTION B-B'

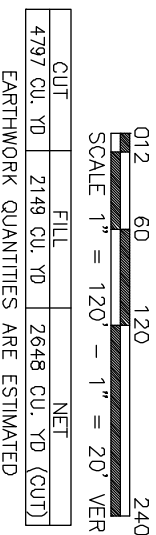


SECTION C-C'



I, FILMON F. JARAMA, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFICATE NO. 10284, AM RESPONSIBLE FOR THIS SURVEY, THAT THE SURVEYED LINES AND CORNERS ARE THE BEST OF MY KNOWLEDGE AND BELIEF, AND THIS SURVEY AND PLAN MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

REDWOOD OPERATING, LLC
PAD GRADING AND CROSS SECTIONS
FOR BRAINARD 11 3H
SECTION 12, TOWNSHIP 18 SOUTH,
RANGE 26 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO



JANUARY 20, 2022
301 SOUTH CANAL
CARLSBAD, NEW MEXICO
SURVEY NO. 8955A

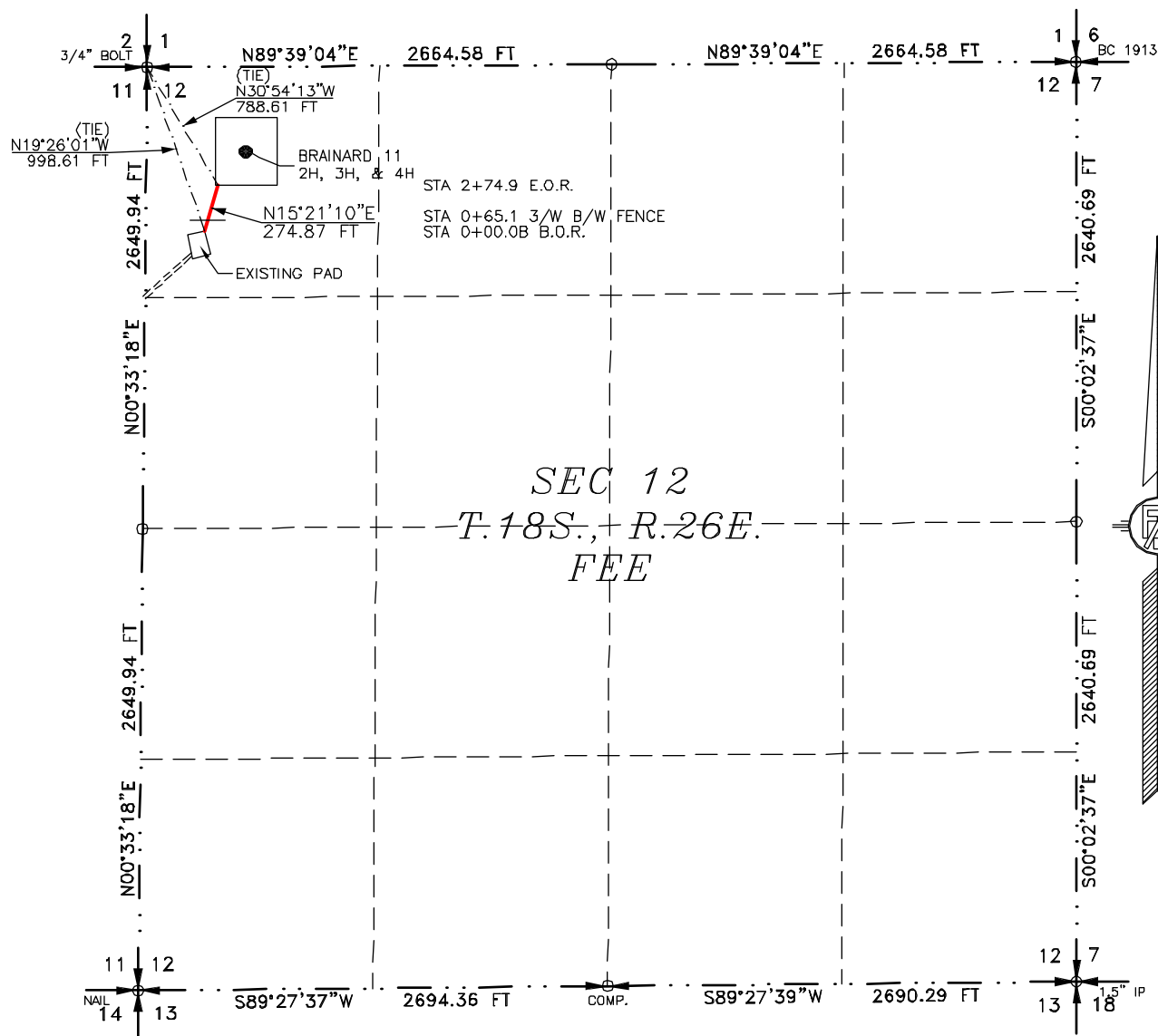
FILMON F. JARAMA, NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR, INC., 301 SOUTH CANAL, CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT

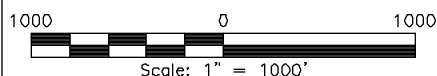
ACCESS ROAD FOR BRAINARD 11 2H, 3H, & 4H

REDWOOD OPERATING, LLC

**CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 12, TOWNSHIP 18 SOUTH, RANGE 26 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JANUARY 20, 2022**



SEE NEXT SHEET (2-2) FOR DESCRIPTION

**GENERAL NOTES**

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
- 2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 1-2

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO (575) 234-3341

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 20th DAY OF JANUARY 2022

FILIMON F. JARAMILLO, PLS
12797
NEW MEXICO PROFESSIONAL SURVEYOR

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SURVEY NO. 8955A

ACCESS ROAD PLAT

ACCESS ROAD FOR BRAINARD 11 2H, 3H, & 4H

REDWOOD OPERATING, LLC

**CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 12, TOWNSHIP 18 SOUTH, RANGE 26 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
JANUARY 20, 2022**

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING FEE LAND IN SECTION 12, TOWNSHIP 18 SOUTH, RANGE 26 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN THE NW/4 NW/4 OF SAID SECTION 12, TOWNSHIP 18 SOUTH, RANGE 26 EAST, N.M.P.M., WHENCE THE NORTHWEST CORNER OF SAID SECTION 12, TOWNSHIP 18 SOUTH, RANGE 26 EAST, N.M.P.M. BEARS N19°26'01"W, A DISTANCE OF 998.61 FEET;
THENCE N15°21'10"E A DISTANCE OF 274.87 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHWEST CORNER OF SAID SECTION 12, TOWNSHIP 18 SOUTH, RANGE 26 EAST, N.M.P.M. BEARS N30°54'13"W, A DISTANCE OF 788.61 FEET;

SAID STRIP OF LAND BEING 274.87 FEET OR 16.66 RODS IN LENGTH, CONTAINING 0.189 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NW/4 274.87 L.F. 16.66 RODS 0.189 ACRES

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 20th DAY OF JANUARY 2022

FILIMON F. JARAMILLO, PLS
301 SOUTH CANAL
(575) 234-3341
CARLSBAD, NEW MEXICO

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SURVEY NO. 8955A

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 2-2

MADRON SURVEYING, INC.

Casing DesignWell: Brainard 11 #3H

String Size & Function: 5 1/2"x 7" inProduction x

Total Depth: 8590 ftTVD: 3090 ft

Pressure Gradient for Calculations(While drilling)

Mud weight, collapse: 10.3 #/galSafety Factor Collapse: 1.125

Mud weight, burst: 10.3 #/galSafety Factor Burst: 1.25

Mud weight for joint strength: 10.3 #/galSafety Factor Joint Strength 1.8

BHP @ TD for: collapse: 1655.004 psiBurst: 1655.004 psi, joint strength: 1655.004 psi

Partially evacuated hole?Pressure gradient remaining: 10 #/gal

Max. Shut in surface pressure: 3000 psi

1st segment	8590 ft	to	3250 ft	Make up Torque ft-lbs	Total ft =	5340
O.D.	Weight	Grade	Threads	opt.	min.	mx.
5.5 inches	17 #/ft	L-80	BTC	3410	2560	4260
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
6,290	7,740 psi	338 ,000 #	397 ,000 #	4.767		

2nd segment	2150 ft	to	3250 ft	Make up Torque ft-lbs	Total ft =	1100
O.D.	Weight	Grade	Threads	opt.	min.	mx.
7 inches	26 #/ft	L-80	BTC	5110	3830	6390
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
5,410 psi	7,240 psi	511 ,000 #	604 ,000 #	6.151		

3rd segment	0 ft	to	2150 ft	Make up Torque ft-lbs	Total ft =	2150
O.D.	Weight	Grade	Threads	opt.	min.	mx.
7 inches	26 #/ft	L-80	LT&C	5110	3830	6390
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
5,410 psi	7,240 psi	511 ,000 #	604 ,000 #	6.151		

4th segment	0 ft	to	0 ft	Make up Torque ft-lbs	Total ft =	0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
psi	psi	,000 #	,000 #			

5th segment	0 ft	to	0 ft	Make up Torque ft-lbs	Total ft =	0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
psi	psi	,000 #	,000 #			

6th segment	0 ft	to	0 ft	Make up Torque ft-lbs	Total ft =	0
O.D.	Weight	Grade	Threads	opt.	min.	mx.
inches	#/ft					
Collapse Resistance	Internal Yield	Joint Strength	Body Yield	Drift		
psi	psi	,000 #	,000 #			

Select	1st segment bottom	8590	S.F.	Actual	Desire
			collapse	3.800595	>= 1.125
	8590 ft to 3250 ft		burst-b	2.700632	>= 1.25
	5.5 26 L-80 BTC		burst-t	2.624352	
	Top of segment 1 (ft)	3250	S.F.	Actual	Desire
Select	2nd segment from bottom		collapse	2.982319	>= 1.125
			burst-b	2.45482	>= 1.25
	3250 ft to 2150 ft		burst-t	2.440619	
	7 26 L-80 BTC		jnt strngth	4.419804	>= 1.8

Top of segment 2 (ft)				2150	S.F.	Actual		Desire
Select	3rd segment from bottom				collapse	4.433559	>=	1.125
					burst-b	2.440619	>=	1.25
					burst-t	2.413333		
					jnt strngth	5.081194	>=	1.8
2150 ft to 0 ft								
7 26 L-80 LT&C								
Top of segment 3 (ft)				0	S.F.	Actual		Desire
Select	4th segment from bottom				collapse	#DIV/0!	>=	1.125
					burst-b	0	>=	1.25
					burst-t	0		
					jnt strngth	5.08119	>=	1.8
0 ft to 0 ft								
0 0 0 0								
Top of segment 4 (ft)					S.F.	Actual		Desire
Select	5th segment from bottom				collapse	#DIV/0!	>=	1.125
					burst-b	0	>=	1.25
					burst-t	0		
					jnt strngth	0	>=	1.8
0 ft to ft								
0 0 0 0								
Top of segment 5 (ft)					S.F.	Actual		Desire
Select	6th segment from bottom				collapse	#DIV/0!	>=	1.125
					burst-b	0	>=	1.25
					burst-t	0		
					jnt strngth	0	>=	1.8
0 ft to ft								
0 0 0 0								
Top of segment 6 (ft)					jnt strngth		>=	1.8

use in colapse calculations across different pressured formations

Three gradient pressure function

Depth of evaluation: 1,200 ft

516

psi @ 1,200 ft

Top of salt: 2,400 ft

fx #1

516

Base of salt: 3,700 ft

fx #2

900

TD of intermediate: 4,600 ft

fx #3

540

Pressure gradient to be used above each top to be used as a function of depth. ex. psi/ft

fx #1

fx #2

fx #3

0.43

0.75

0.45

- 1) Calculate neutral point for buckling with temperature affects computed also
- 2) Surface burst calculations & kick tolerance in surface pressure for burst
- 3) Do a comparison test to determine which value is lower joint strength or body yield to use in tensile strength calculations
- 4) Raise joint strength safety factor up to next level on page #2
- 5) Sour service what pipe can be used with proper degrading of strength factors and as function of temp

Adjust for best combination of safety factors

		Secondary
S.F. Collapse bottom of segment:		
S.F. Collapse top of segment:		3.36945
S.F. Burst bottom of segment:		
S.F. Burst top of segment		
S.F. Joint strength bottom of segment:		473.389
S.F. Joint strength top of segment:		
S.F. Body yield strength bottom of segment:		556.022
S.F. Body yield strength top of segment:		5.19131

Collapse calculations for 1st segment - casing evacuated

Buoyancy factor collapse:	0.84241	
calculations for bottom of segment @	3090 ft	
hydrostatic pressure collapse - backside:	1655 psi	
Axial load @ bottom of section	0 lbs	previous segments
Axial load factor:	0	load/(pipe body yield strength)
Collapse strength reduction factor:	1	Messrs, Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	6290 psi	
Actual safety factor	3.8006	adjusted casing rating / actual pressure

calculations for top of segment @	3250 ft	
hydrostatic pressure collapse - backside:	1740.7 psi	
Axial load @ top of section	76474 lbs	previous segments + (this segment x BF)
Axial load factor:	0.19263	load/(pipe body yield strength)
Collapse strength reduction factor:	0.93247	Messrs, Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	5865.21 psi	
Actual safety factor	3.36945	adjusted casing rating / actual pressure

Burst calculations for 1st segment - Completion fracture treatment

calculations for bottom of segment @	8590 ft	
Differential burst pressure	2866 psi	(frac. pres.-mud pres.) + max. surf. pres.
Burst rating of segment	7740 psi	
Actual safety factor	2.70063	casing rating / differential burst pressure
calculations for top of segment @	3250 ft	
Differential burst pressure	2949.3 psi	(frac. pres.-mud pres.) + max. surf. pres.
Burst rating of segment	7740 psi	
Actual safety factor	2.62435	casing rating / differential burst pressure

Joint strength calculations for 1st segment

Buoyancy factor for joint strength calc.:	0.84241	
calculations for bottom of segment @	8590 ft	
Axial load @ bottom of section	714 lbs	weight of previous segments
Joint Strength of segment	338000 lbs	
Body Yield Strength of segment	397000 lbs	
Actual safety factor joint strength	473.389	csg joint strength / axial load
Actual safety factor body yield	556.022	csg body yield strength / axial load
calculations for top of segment @	3250 ft	
Axial load @ top of section	76474 lbs	weight of previous segments + (this segment x BF)
Joint Strength of segment	338000 lbs	
Body Yield Strength of segment	397000 lbs	
Actual safety factor joint strength	4.4198	csg joint strength / axial load
Actual safety factor body yield	5.19131	csg body yield strength / axial load

Adjust for best combination of safety factors

	Secondary
S.F. Collapse bottom of segment:	
S.F. Collapse top of segment:	4.43356
S.F. Burst bottom of segment:	
S.F. Burst top of segment	
S.F. Joint strength bottom of segment:	6.68201
S.F. Joint strength top of segment:	
S.F. Body yield strength bottom of segment:	7.89811
S.F. Body yield strength top of segment:	6.00595

Collapse calculations for 2nd segment - casing evacuated

Buoyancy factor collapse:	0.84241	
calculations for bottom of segment @	3250 ft	
hydrostatic pressure collapse - backside:	1740.7 psi	
Axial load @ bottom of section	76474 lbs	load @ top of last segment
Axial load factor:	0.12661	load/(pipe body yield strength)
Collapse strength reduction factor:	0.95958	Messrs, Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	5191.32 psi	
Actual safety factor	2.98232	adjusted casing rating / actual pressure
calculations for top of segment @	2150 ft	
hydrostatic pressure collapse - backside:	1151.54 psi	
Axial load @ top of section	100567 lbs	previous segments + (this segment x BF)
Axial load factor:	0.1665	load/(pipe body yield strength)
Collapse strength reduction factor:	0.9437	Messrs, Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	5105.42 psi	
Actual safety factor	4.43356	adjusted casing rating / actual pressure

Burst calculations for 2nd segment - Completion fracture treatment

calculations for bottom of segment @	3250 ft	
Differential burst pressure	2949.3 psi	(frac. pres.-mud pres.) + max. surf. pres.
Burst rating of segment	7240 psi	
Actual safety factor	2.45482	casing rating / differential burst pressure
calculations for top of segment @	2150 ft	

Differential burst pressure	2966.46 psi	(frac. pres.-mud pres.) + max. surf. pres.
Burst rating of segment	7240 psi	
Actual safety factor	2.44062	casing rating / differential burst pressure

Joint strength calculations for 2nd segment

Buoyancy factor for joint strength calc.:	0.84241	
calculations for bottom of segment @	3250 ft	
Axial load @ bottom of section	76474 lbs	weight of previous segments
Joint Strength of segment	511000 lbs	
Body Yield Strength of segment	604000 lbs	
Actual safety factor joint strength	6.68201	csg joint strength / axial load
Actual safety factor body yield	7.89811	csg body yield strength / axial load
calculations for top of segment @	2150 ft	
Axial load @ top of section	100567 lbs	weight of previous segments + (this segment x BF)
Joint Strength of segment	511000 lbs	
Body Yield Strength of segment	604000 lbs	
Actual safety factor joint strength	5.08119	csg joint strength / axial load
Actual safety factor body yield	6.00595	csg body yield strength / axial load

Adjust for best combination of safety factors

S.F. Collapse bottom of segment:	Secondary
S.F. Collapse top of segment:	#DIV/0!
S.F. Burst bottom of segment:	
S.F. Burst top of segment	
S.F. Joint strength bottom of segment:	5.08119
S.F. Joint strength top of segment:	
S.F. Body yield strength bottom of segment:	6.00595
S.F. Body yield strength top of segment:	6.00595

Collapse calculations for 3rd segment - casing evacuated

Buoyancy factor collapse:	0.84241	
calculations for bottom of segment @	2150 ft	
hydrostatic pressure collapse - backside:	1151.54 psi	
Axial load @ bottom of section	100567 lbs	load @ top of last segment
Axial load factor:	0.1665	load/(pipe body yield strength)
Collapse strength reduction factor:	0.9437	Messrs, Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	5105.42 psi	
Actual safety factor	4.43356	adjusted casing rating / actual pressure
calculations for top of segment @	0 ft	
hydrostatic pressure collapse - backside:	0 psi	
Axial load @ top of section	147658 lbs	previous segments + (this segment x BF)
Axial load factor:	0.24447	load/(pipe body yield strength)
Collapse strength reduction factor:	0.90818	Messrs, Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	4913.24 psi	
Actual safety factor	#DIV/0!	adjusted casing rating / actual pressure

Burst calculations for 3rd segment - Completion fracture treatment

calculations for bottom of segment @	2150 ft	
Differential burst pressure	2966.46 psi	(frac. pres.-mud pres.) + max. surf. pres.
Burst rating of segment	7240 psi	
Actual safety factor	2.44062	casing rating / differential burst pressure
calculations for top of segment @	0 ft	
Differential burst pressure	3000 psi	(frac. pres.-mud pres.) + max. surf. pres.
Burst rating of segment	7240 psi	
Actual safety factor	2.41333	casing rating / differential burst pressure

Joint strength calculations for 3rd segment

Buoyancy factor for joint strength calc.:		
calculations for bottom of segment @	2150 ft	
Axial load @ bottom of section	100567 lbs	load @ top of last segment
Joint Strength of segment	511000 lbs	
Body Yield Strength of segment	604000 lbs	
Actual safety factor joint strength	5.08119	csg joint strength / axial load
Actual safety factor body yield	6.00595	csg body yield strength / axial load
calculations for top of segment @	0 ft	
Axial load @ top of section	100567 lbs	weight of previous segments + (this segment x BF)

Joint Strength of segment	511000 lbs	
Body Yield Strength of segment	604000 lbs	
Actual safety factor joint strength	5.08119	csg joint strength / axial load
Actual safety factor body yield	6.00595	csg body yield strength / axial load

Adjust for best combination of safety factors

	Secondary
S.F. Collapse bottom of segment:	
S.F. Collapse top of segment:	#DIV/0!
S.F. Burst bottom of segment:	
S.F. Burst top of segment:	
S.F. Joint strength bottom of segment:	0
S.F. Joint strength top of segment:	
S.F. Body yield strength bottom of segment:	0
S.F. Body yield strength top of segment:	0

Collapse calculations for 4th segment - casing evacuated

Buoyancy factor collapse:	0.84241	
calculations for bottom of segment @	0 ft	
hydrostatic pressure collapse - backside:	0 psi	
Axial load @ bottom of section	147658 lbs	load @ top of last segment
Axial load factor:	#DIV/0!	load/(pipe body yield strength)
Collapse strength reduction factor:	#DIV/0!	Messrs, Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	#DIV/0! psi	
Actual safety factor	#DIV/0!	adjusted casing rating / actual pressure
calculations for top of segment @	0 ft	
hydrostatic pressure collapse - backside:	0 psi	
Axial load @ top of section	147658 lbs	previous segments + (this segment x BF)
Axial load factor:	#DIV/0!	load/(pipe body yield strength)
Collapse strength reduction factor:	#DIV/0!	Messrs, Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	#DIV/0! psi	
Actual safety factor	#DIV/0!	adjusted casing rating / actual pressure

Burst calculations for 4th segment - Completion fracture treatment

calculations for bottom of segment @	0 ft	
Differential burst pressure	3000 psi	(frac. pres.-mud pres.) + max. surf. pres.
Burst rating of segment	0 psi	
Actual safety factor	0	casing rating / differential burst pressure
calculations for top of segment @	0 ft	
Differential burst pressure	3000 psi	(frac. pres.-mud pres.) + max. surf. pres.
Burst rating of segment	0 psi	
Actual safety factor	0	casing rating / differential burst pressure

Joint strength calculations for 4th segment

Buoyancy factor for joint strength calc.:	0.84241	
calculations for bottom of segment @	0 ft	
Axial load @ bottom of section	100567 lbs	load @ top of last segment
Joint Strength of segment	0 lbs	
Body Yield Strength of segment	0 lbs	
Actual safety factor joint strength	0	csg joint strength / axial load
Actual safety factor body yield	0	csg body yield strength / axial load
calculations for top of segment @	0 ft	
Axial load @ top of section	100567 lbs	weight of previous segments + (this segment x BF)
Joint Strength of segment	0 lbs	
Body Yield Strength of segment	0 lbs	
Actual safety factor joint strength	0	csg joint strength / axial load
Actual safety factor body yield	0	csg body yield strength / axial load

Adjust for best combination of safety factors

	Secondary
S.F. Collapse bottom of segment:	
S.F. Collapse top of segment:	#DIV/0!
S.F. Burst bottom of segment:	
S.F. Burst top of segment:	
S.F. Joint strength bottom of segment:	0
S.F. Joint strength top of segment:	
S.F. Body yield strength bottom of segment:	0
S.F. Body yield strength top of segment:	0

Collapse calculations for 5th segment - casing evacuated

Buoyancy factor collapse:	0.84241	
calculations for bottom of segment @	0 ft	
hydrostatic pressure collapse - backside:	0 psi	
Axial load @ bottom of section	147658 lbs	load @ top of last segment
Axial load factor:	#DIV/0!	load/(pipe body yield strength)
Collapse strength reduction factor:	#DIV/0!	Messrs, Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	#DIV/0! psi	
Actual safety factor	#DIV/0!	adjusted casing rating / actual pressure
calculations for top of segment @	0 ft	
hydrostatic pressure collapse - backside:	0 psi	
Axial load @ top of section	147658 lbs	previous segments + (this segment x BF)
Axial load factor:	#DIV/0!	load/(pipe body yield strength)
Collapse strength reduction factor:	#DIV/0!	Messrs, Westcott, Dunlop, Kemler,1940
Adjusted collapse rating of segment:	#DIV/0! psi	
Actual safety factor	#DIV/0!	adjusted casing rating / actual pressure

Burst calculations for 5th segment - Completion fracture treatment

calculations for bottom of segment @	0 ft	
Differential burst pressure	3000 psi	(frac. pres.-mud pres.) + max. surf. pres.
Burst rating of segment	0 psi	
Actual safety factor	0	casing rating / differential burst pressure
calculations for top of segment @	0 ft	
Differential burst pressure	3000 psi	(frac. pres.-mud pres.) + max. surf. pres.
Burst rating of segment	0 psi	
Actual safety factor	0	casing rating / differential burst pressure

Joint strength calculations for 5th segment

Buoyancy factor for joint strength calc.:	0.84241	
calculations for bottom of segment @	0 ft	
Axial load @ bottom of section	100567 lbs	load @ top of last segment
Joint Strength of segment	0 lbs	
Body Yield Strength of segment	0 lbs	
Actual safety factor joint strength	0	csg joint strength / axial load
Actual safety factor body yield	0	csg body yield strength / axial load
calculations for top of segment @	0 ft	
Axial load @ top of section	100567 lbs	weight of previous segments + (this segment x BF)
Joint Strength of segment	0 lbs	
Body Yield Strength of segment	0 lbs	
Actual safety factor joint strength	0	csg joint strength / axial load
Actual safety factor body yield	0	csg body yield strength / axial load

Adjust for best combination of safety factors

S.F. Collapse bottom of segment:	Secondary
S.F. Collapse top of segment:	#DIV/0!
S.F. Burst bottom of segment:	
S.F. Burst top of segment	
S.F. Joint strength bottom of segment:	0
S.F. Joint strength top of segment:	
S.F. Body yield strength bottom of segment:	0
S.F. Body yield strength top of segment:	0

Collapse calculations for 6th segment - casing evacuated

Buoyancy factor collapse:	0.84241	
calculations for bottom of segment @	0 ft	
hydrostatic pressure collapse - backside:	0 psi	
Axial load @ bottom of section	147658 lbs	load @ top of last segment
Axial load factor:	#DIV/0!	load/(pipe body yield strength)
Collapse strength reduction factor:	#DIV/0!	Messrs, Westcott, Dunlop, Kemler, 1940
Adjusted collapse rating of segment:	#DIV/0! psi	
Actual safety factor	#DIV/0!	adjusted casing rating / actual pressure
calculations for top of segment @	0 ft	
hydrostatic pressure collapse - backside:	0 psi	
Axial load @ top of section	147658 lbs	previous segments + (this segment x BF)
Axial load factor:	#DIV/0!	load/(pipe body yield strength)
Collapse strength reduction factor:	#DIV/0!	Messrs, Westcott, Dunlop, Kemler, 1940
Adjusted collapse rating of segment:	#DIV/0! psi	
Actual safety factor	#DIV/0!	adjusted casing rating / actual pressure

Burst calculations for 6th segment - Completion fracture treatment

calculations for bottom of segment @	0 ft	
Differential burst pressure	3000 psi	(frac. pres.-mud pres.) + max. surf. pres.
Burst rating of segment	0 psi	
Actual safety factor	0	casing rating / differential burst pressure
calculations for top of segment @	0 ft	
Differential burst pressure	3000 psi	(frac. pres.-mud pres.) + max. surf. pres.
Burst rating of segment	0 psi	
Actual safety factor	0	casing rating / differential burst pressure

Joint strength calculations for 6th segment

Buoyancy factor for joint strength calc.:	0.84241	
calculations for bottom of segment @	0 ft	
Axial load @ bottom of section	100567 lbs	load @ top of last segment
Joint Strength of segment	0 lbs	
Body Yield Strength of segment	0 lbs	
Actual safety factor joint strength	0	csg joint strength / axial load
Actual safety factor body yield	0	csg body yield strength / axial load
calculations for top of segment @	0 ft	
Axial load @ top of section	100567 lbs	weight of previous segments + (this segment x BF)
Joint Strength of segment	0 lbs	
Body Yield Strength of segment	0 lbs	
Actual safety factor joint strength	0	csg joint strength / axial load
Actual safety factor body yield	0	csg body yield strength / axial load

Brainard 11 #3H, Plan 1

Operator	Redwood Operating LLC	Units	feet, °/100ft	10:39 Tuesday, January 25, 2022	Page 1 of 4
Field	Red Lake	County	Eddy	Vertical Section Azimuth	270.31
Well Name	Brainard 11 #3H	State	New Mexico	Survey Calculation Method	Minimum Curvature
Plan	1	Country	USA	Database	Access

Location	SL: 485 FNL & 575 FWL Sec 12-T18S-R26E BHL: 330 FNL & 1 FWL Sec 11-T18S-R26E	Map Zone	UTM	Lat Long Ref	
Site		Surface X	1842709.4	Surface Long	
Slot Name		Surface Y	11894923.4	Surface Lat	
Well Number	3H	Surface Z	3300.7	Global Z Ref	KB
Project		Ground Level	3282.7	Local North Ref	Grid

DIRECTIONAL WELL PLAN

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
ft	deg	deg	ft	ft	ft	°/100ft	ft	ft	ft	ft
*** TIE (at MD = 2149.00)										
2149.00	0.00	0.0	2149.00	0.00	0.00		0.00	1842709.40	11894923.40	1151.70
2150.00	0.00	0.0	2150.00	0.00	0.00	0.00	0.00	1842709.40	11894923.40	1150.70
2200.00	0.00	0.0	2200.00	0.00	0.00	0.00	0.00	1842709.40	11894923.40	1100.70
*** KOP 8 DEGREES (at MD = 2249.00)										
2249.00	0.00	0.0	2249.00	0.00	0.00	0.00	0.00	1842709.40	11894923.40	1051.70
2250.00	0.08	283.4	2250.00	0.00	0.00	8.00	0.00	1842709.40	11894923.40	1050.70
2300.00	4.08	283.4	2299.96	0.42	-1.77	8.00	1.77	1842707.63	11894923.82	1000.74
2350.00	8.08	283.4	2349.67	1.65	-6.92	8.00	6.93	1842702.48	11894925.05	951.03
2400.00	12.08	283.4	2398.88	3.68	-15.43	8.00	15.45	1842693.97	11894927.08	901.82
2450.00	16.08	283.4	2447.37	6.49	-27.26	8.00	27.29	1842682.14	11894929.89	853.33
2500.00	20.08	283.4	2494.89	10.09	-42.35	8.00	42.40	1842667.05	11894933.49	805.81
2550.00	24.08	283.4	2541.22	14.44	-60.63	8.00	60.71	1842648.77	11894937.84	759.48
2600.00	28.08	283.4	2586.12	19.54	-82.01	8.00	82.11	1842627.39	11894942.94	714.58
2650.00	32.08	283.4	2629.37	25.34	-106.38	8.00	106.52	1842603.02	11894948.74	671.33
2700.00	36.08	283.4	2670.78	31.84	-133.63	8.00	133.80	1842575.77	11894955.24	629.92
2750.00	40.08	283.4	2710.13	38.98	-163.62	8.00	163.83	1842545.78	11894962.38	590.57
2800.00	44.08	283.4	2747.23	46.74	-196.21	8.00	196.46	1842513.19	11894970.14	553.47
2850.00	48.08	283.4	2781.91	55.09	-231.24	8.00	231.53	1842478.16	11894978.49	518.79
2900.00	52.08	283.4	2813.99	63.97	-268.54	8.00	268.88	1842440.86	11894987.37	486.71
*** 55 DEGREE TANGENT (at MD = 2936.50)										
2936.50	55.00	283.4	2835.67	70.78	-297.09	8.00	297.47	1842412.31	11894994.18	465.03
2950.00	55.00	283.4	2843.42	73.34	-307.85	0.00	308.24	1842401.55	11894996.74	457.28
3000.00	55.00	283.4	2872.10	82.83	-347.69	0.00	348.13	1842361.71	11895006.23	428.60
3050.00	55.00	283.4	2900.78	92.32	-387.53	0.00	388.03	1842321.87	11895015.72	399.92
3100.00	55.00	283.4	2929.45	101.81	-427.37	0.00	427.92	1842282.03	11895025.21	371.25
3150.00	55.00	283.4	2958.13	111.31	-467.22	0.00	467.81	1842242.18	11895034.71	342.57
*** 10 DEGREE BUILD (at MD = 3186.50)										
3186.50	55.00	283.4	2979.07	118.24	-496.30	0.00	496.93	1842213.10	11895041.64	321.63
3200.00	56.25	282.8	2986.69	120.76	-507.15	10.00	507.80	1842202.25	11895044.16	314.01
3250.00	60.92	280.7	3012.75	129.41	-548.92	10.00	549.61	1842160.48	11895052.81	287.95
3300.00	65.61	278.7	3035.24	136.93	-592.92	10.00	593.66	1842116.48	11895060.33	265.46
3350.00	70.33	277.0	3053.99	143.24	-638.82	10.00	639.59	1842070.58	11895066.64	246.71
3400.00	75.06	275.3	3068.86	148.31	-686.28	10.00	687.07	1842023.13	11895071.71	231.84
3450.00	79.80	273.6	3079.74	152.09	-734.91	10.00	735.73	1841974.49	11895075.49	220.96
3500.00	84.56	272.1	3086.54	154.56	-784.37	10.00	785.20	1841925.03	11895077.96	214.16
3550.00	89.31	270.5	3089.22	155.69	-834.27	10.00	835.10	1841875.13	11895079.09	211.48
*** LANDING POINT (at MD = 3557.23)										
3557.23	90.00	270.3	3089.26	155.75	-841.50	10.00	842.33	1841867.90	11895079.15	211.44

Brainard 11 #3H, Plan 1

Operator	Redwood Operating LLC			Units	feet, °/100ft		10:39 Tuesday, January 25, 2022 Page 2 of 4			
Field	Red Lake			County	Eddy		Vertical Section Azimuth	270.31		
Well Name	Brainard 11 #3H			State	New Mexico		Survey Calculation Method	Minimum Curvature		
Plan	1			Country	USA		Database	Access		
Location	SL: 485 FNL & 575 FWL Sec 12-T18S-R26E BHL: 330 FNL & 1 FWL Sec 11-T18S-R26E				Map Zone	UTM		Lat Long Ref		
Site					Surface X	1842709.4		Surface Long		
Slot Name					Surface Y	11894923.4		Surface Lat		
Well Number	3H				Surface Z	3300.7		Global Z Ref KB		
Project					Ground Level	3282.7		Local North Ref Grid		
DIRECTIONAL WELL PLAN										
MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
ft	deg	deg	ft	ft	ft	°/100ft	ft	ft	ft	ft
3600.00	90.00	270.3	3089.26	155.98	-884.27	0.00	885.10	1841825.13	11895079.38	211.44
3650.00	90.00	270.3	3089.26	156.25	-934.27	0.00	935.10	1841775.13	11895079.65	211.44
3700.00	90.00	270.3	3089.26	156.52	-984.27	0.00	985.10	1841725.13	11895079.92	211.44
3750.00	90.00	270.3	3089.26	156.79	-1034.27	0.00	1035.10	1841675.13	11895080.19	211.44
3800.00	90.00	270.3	3089.26	157.06	-1084.27	0.00	1085.10	1841625.13	11895080.46	211.44
3850.00	90.00	270.3	3089.26	157.33	-1134.27	0.00	1135.10	1841575.13	11895080.73	211.44
3900.00	90.00	270.3	3089.26	157.60	-1184.27	0.00	1185.10	1841525.13	11895081.00	211.44
3950.00	90.00	270.3	3089.26	157.87	-1234.27	0.00	1235.10	1841475.13	11895081.27	211.44
4000.00	90.00	270.3	3089.26	158.14	-1284.26	0.00	1285.10	1841425.14	11895081.54	211.44
4050.00	90.00	270.3	3089.26	158.41	-1334.26	0.00	1335.10	1841375.14	11895081.81	211.44
4100.00	90.00	270.3	3089.26	158.68	-1384.26	0.00	1385.10	1841325.14	11895082.08	211.44
4150.00	90.00	270.3	3089.26	158.95	-1434.26	0.00	1435.10	1841275.14	11895082.35	211.44
4200.00	90.00	270.3	3089.26	159.22	-1484.26	0.00	1485.10	1841225.14	11895082.62	211.44
4250.00	90.00	270.3	3089.26	159.49	-1534.26	0.00	1535.10	1841175.14	11895082.89	211.44
4300.00	90.00	270.3	3089.26	159.76	-1584.26	0.00	1585.10	1841125.14	11895083.16	211.44
4350.00	90.00	270.3	3089.26	160.04	-1634.26	0.00	1635.10	1841075.14	11895083.44	211.44
4400.00	90.00	270.3	3089.26	160.31	-1684.26	0.00	1685.10	1841025.14	11895083.71	211.44
4450.00	90.00	270.3	3089.26	160.58	-1734.26	0.00	1735.10	1840975.14	11895083.98	211.44
4500.00	90.00	270.3	3089.26	160.85	-1784.26	0.00	1785.10	1840925.14	11895084.25	211.44
4550.00	90.00	270.3	3089.26	161.12	-1834.26	0.00	1835.10	1840875.14	11895084.52	211.44
4600.00	90.00	270.3	3089.26	161.39	-1884.26	0.00	1885.10	1840825.14	11895084.79	211.44
4650.00	90.00	270.3	3089.26	161.66	-1934.26	0.00	1935.10	1840775.14	11895085.06	211.44
4700.00	90.00	270.3	3089.26	161.93	-1984.25	0.00	1985.10	1840725.15	11895085.33	211.44
4750.00	90.00	270.3	3089.26	162.20	-2034.25	0.00	2035.10	1840675.15	11895085.60	211.44
4800.00	90.00	270.3	3089.26	162.47	-2084.25	0.00	2085.10	1840625.15	11895085.87	211.44
4850.00	90.00	270.3	3089.26	162.74	-2134.25	0.00	2135.10	1840575.15	11895086.14	211.44
4900.00	90.00	270.3	3089.26	163.01	-2184.25	0.00	2185.10	1840525.15	11895086.41	211.44
4950.00	90.00	270.3	3089.26	163.28	-2234.25	0.00	2235.10	1840475.15	11895086.68	211.44
5000.00	90.00	270.3	3089.26	163.55	-2284.25	0.00	2285.10	1840425.15	11895086.95	211.44
5050.00	90.00	270.3	3089.26	163.82	-2334.25	0.00	2335.10	1840375.15	11895087.22	211.44
5100.00	90.00	270.3	3089.26	164.09	-2384.25	0.00	2385.10	1840325.15	11895087.49	211.44
5150.00	90.00	270.3	3089.26	164.36	-2434.25	0.00	2435.10	1840275.15	11895087.76	211.44
5200.00	90.00	270.3	3089.26	164.63	-2484.25	0.00	2485.10	1840225.15	11895088.03	211.44
5250.00	90.00	270.3	3089.26	164.90	-2534.25	0.00	2535.10	1840175.15	11895088.30	211.44
5300.00	90.00	270.3	3089.26	165.18	-2584.25	0.00	2585.10	1840125.15	11895088.58	211.44
5350.00	90.00	270.3	3089.26	165.45	-2634.24	0.00	2635.10	1840075.16	11895088.85	211.44
5400.00	90.00	270.3	3089.26	165.72	-2684.24	0.00	2685.10	1840025.16	11895089.12	211.44

Brainard 11 #3H, Plan 1

Operator	Redwood Operating LLC			Units	feet, °/100ft		10:39 Tuesday, January 25, 2022 Page 3 of 4				
Field	Red Lake			County	Eddy		Vertical Section Azimuth		270.31		
Well Name	Brainard 11 #3H			State	New Mexico		Survey Calculation Method		Minimum Curvature		
Plan	1			Country	USA		Database		Access		
Location		SL: 485 FNL & 575 FWL Sec 12-T18S-R26E BHL: 330 FNL & 1 FWL Sec 11-T18S-R26E				Map Zone	UTM		Lat Long Ref		
Site						Surface X	1842709.4		Surface Long		
Slot Name						Surface Y	11894923.4		Surface Lat		
Well Number		3H		API			Surface Z	3300.7		Global Z Ref	KB
Project				MD/TVD Ref	KB		Ground Level	3282.7		Local North Ref	Grid
DIRECTIONAL WELL PLAN											
MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*	
ft	deg	deg	ft	ft	ft	°/100ft	ft	ft	ft	ft	ft
5450.00	90.00	270.3	3089.26	165.99	-2734.24	0.00	2735.10	1839975.16	11895089.39	211.44	
5500.00	90.00	270.3	3089.26	166.26	-2784.24	0.00	2785.10	1839925.16	11895089.66	211.44	
5550.00	90.00	270.3	3089.26	166.53	-2834.24	0.00	2835.10	1839875.16	11895089.93	211.44	
5600.00	90.00	270.3	3089.26	166.80	-2884.24	0.00	2885.10	1839825.16	11895090.20	211.44	
5650.00	90.00	270.3	3089.26	167.07	-2934.24	0.00	2935.10	1839775.16	11895090.47	211.44	
5700.00	90.00	270.3	3089.26	167.34	-2984.24	0.00	2985.10	1839725.16	11895090.74	211.44	
5750.00	90.00	270.3	3089.26	167.61	-3034.24	0.00	3035.10	1839675.16	11895091.01	211.44	
5800.00	90.00	270.3	3089.26	167.88	-3084.24	0.00	3085.10	1839625.16	11895091.28	211.44	
5850.00	90.00	270.3	3089.26	168.15	-3134.24	0.00	3135.10	1839575.16	11895091.55	211.44	
5900.00	90.00	270.3	3089.26	168.42	-3184.24	0.00	3185.10	1839525.16	11895091.82	211.44	
5950.00	90.00	270.3	3089.26	168.69	-3234.24	0.00	3235.10	1839475.16	11895092.09	211.44	
6000.00	90.00	270.3	3089.26	168.96	-3284.24	0.00	3285.10	1839425.16	11895092.36	211.44	
6050.00	90.00	270.3	3089.26	169.23	-3334.23	0.00	3335.10	1839375.17	11895092.63	211.44	
6100.00	90.00	270.3	3089.26	169.50	-3384.23	0.00	3385.10	1839325.17	11895092.90	211.44	
6150.00	90.00	270.3	3089.26	169.77	-3434.23	0.00	3435.10	1839275.17	11895093.17	211.44	
6200.00	90.00	270.3	3089.26	170.04	-3484.23	0.00	3485.10	1839225.17	11895093.44	211.44	
6250.00	90.00	270.3	3089.26	170.32	-3534.23	0.00	3535.10	1839175.17	11895093.72	211.44	
6300.00	90.00	270.3	3089.26	170.59	-3584.23	0.00	3585.10	1839125.17	11895093.99	211.44	
6350.00	90.00	270.3	3089.26	170.86	-3634.23	0.00	3635.10	1839075.17	11895094.26	211.44	
6400.00	90.00	270.3	3089.26	171.13	-3684.23	0.00	3685.10	1839025.17	11895094.53	211.44	
6450.00	90.00	270.3	3089.26	171.40	-3734.23	0.00	3735.10	1838975.17	11895094.80	211.44	
6500.00	90.00	270.3	3089.26	171.67	-3784.23	0.00	3785.10	1838925.17	11895095.07	211.44	
6550.00	90.00	270.3	3089.26	171.94	-3834.23	0.00	3835.10	1838875.17	11895095.34	211.44	
6600.00	90.00	270.3	3089.26	172.21	-3884.23	0.00	3885.10	1838825.17	11895095.61	211.44	
6650.00	90.00	270.3	3089.26	172.48	-3934.23	0.00	3935.10	1838775.17	11895095.88	211.44	
6700.00	90.00	270.3	3089.26	172.75	-3984.23	0.00	3985.10	1838725.17	11895096.15	211.44	
6750.00	90.00	270.3	3089.26	173.02	-4034.22	0.00	4035.10	1838675.18	11895096.42	211.44	
6800.00	90.00	270.3	3089.26	173.29	-4084.22	0.00	4085.10	1838625.18	11895096.69	211.44	
6850.00	90.00	270.3	3089.26	173.56	-4134.22	0.00	4135.10	1838575.18	11895096.96	211.44	
6900.00	90.00	270.3	3089.26	173.83	-4184.22	0.00	4185.10	1838525.18	11895097.23	211.44	
6950.00	90.00	270.3	3089.26	174.10	-4234.22	0.00	4235.10	1838475.18	11895097.50	211.44	
7000.00	90.00	270.3	3089.26	174.37	-4284.22	0.00	4285.10	1838425.18	11895097.77	211.44	
7050.00	90.00	270.3	3089.26	174.64	-4334.22	0.00	4335.10	1838375.18	11895098.04	211.44	
7100.00	90.00	270.3	3089.26	174.91	-4384.22	0.00	4385.10	1838325.18	11895098.31	211.44	
7150.00	90.00	270.3	3089.26	175.18	-4434.22	0.00	4435.10	1838275.18	11895098.58	211.44	
7200.00	90.00	270.3	3089.26	175.46	-4484.22	0.00	4485.10	1838225.18	11895098.86	211.44	
7250.00	90.00	270.3	3089.26	175.73	-4534.22	0.00	4535.10	1838175.18	11895099.13	211.44	

Brainard 11 #3H, Plan 1

Operator	Redwood Operating LLC	Units	feet, °/100ft	10:39 Tuesday, January 25, 2022 Page 4 of 4	
Field	Red Lake	County	Eddy	Vertical Section Azimuth	270.31
Well Name	Brainard 11 #3H	State	New Mexico	Survey Calculation Method	Minimum Curvature
Plan	1	Country	USA	Database	Access
Location	SL: 485 FNL & 575 FWL Sec 12-T18S-R26E BHL: 330		Map Zone	UTM	
	FNL & 1 FWL Sec 11-T18S-R26E			Lat Long Ref	
Site			Surface X	1842709.4	
Slot Name			Surface Y	11894923.4	
Well Number	3H	UWI	Surface Z	3300.7	
		API	Ground Level	3282.7	
Project		MD/TVD Ref	KB	Global Z Ref	KB
				Local North Ref	Grid

DIRECTIONAL WELL PLAN

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
ft	deg	deg	ft	ft	ft	°/100ft	ft	ft	ft	ft
7300.00	90.00	270.3	3089.26	176.00	-4584.22	0.00	4585.10	1838125.18	11895099.40	211.44
7350.00	90.00	270.3	3089.26	176.27	-4634.22	0.00	4635.10	1838075.18	11895099.67	211.44
7400.00	90.00	270.3	3089.26	176.54	-4684.21	0.00	4685.10	1838025.19	11895099.94	211.44
7450.00	90.00	270.3	3089.26	176.81	-4734.21	0.00	4735.10	1837975.19	11895100.21	211.44
7500.00	90.00	270.3	3089.26	177.08	-4784.21	0.00	4785.10	1837925.19	11895100.48	211.44
7550.00	90.00	270.3	3089.26	177.35	-4834.21	0.00	4835.10	1837875.19	11895100.75	211.44
7600.00	90.00	270.3	3089.26	177.62	-4884.21	0.00	4885.10	1837825.19	11895101.02	211.44
7650.00	90.00	270.3	3089.26	177.89	-4934.21	0.00	4935.10	1837775.19	11895101.29	211.44
7700.00	90.00	270.3	3089.26	178.16	-4984.21	0.00	4985.10	1837725.19	11895101.56	211.44
7750.00	90.00	270.3	3089.26	178.43	-5034.21	0.00	5035.10	1837675.19	11895101.83	211.44
7800.00	90.00	270.3	3089.26	178.70	-5084.21	0.00	5085.10	1837625.19	11895102.10	211.44
7850.00	90.00	270.3	3089.26	178.97	-5134.21	0.00	5135.10	1837575.19	11895102.37	211.44
7900.00	90.00	270.3	3089.26	179.24	-5184.21	0.00	5185.10	1837525.19	11895102.64	211.44
7950.00	90.00	270.3	3089.26	179.51	-5234.21	0.00	5235.10	1837475.19	11895102.91	211.44
8000.00	90.00	270.3	3089.26	179.78	-5284.21	0.00	5285.10	1837425.19	11895103.18	211.44
8050.00	90.00	270.3	3089.26	180.05	-5334.21	0.00	5335.10	1837375.19	11895103.45	211.44
8100.00	90.00	270.3	3089.26	180.32	-5384.20	0.00	5385.10	1837325.20	11895103.72	211.44
8150.00	90.00	270.3	3089.26	180.60	-5434.20	0.00	5435.10	1837275.20	11895104.00	211.44
8200.00	90.00	270.3	3089.26	180.87	-5484.20	0.00	5485.10	1837225.20	11895104.27	211.44
8250.00	90.00	270.3	3089.26	181.14	-5534.20	0.00	5535.10	1837175.20	11895104.54	211.44
8300.00	90.00	270.3	3089.26	181.41	-5584.20	0.00	5585.10	1837125.20	11895104.81	211.44
8350.00	90.00	270.3	3089.26	181.68	-5634.20	0.00	5635.10	1837075.20	11895105.08	211.44
8400.00	90.00	270.3	3089.26	181.95	-5684.20	0.00	5685.10	1837025.20	11895105.35	211.44
8450.00	90.00	270.3	3089.26	182.22	-5734.20	0.00	5735.10	1836975.20	11895105.62	211.44
8500.00	90.00	270.3	3089.26	182.49	-5784.20	0.00	5785.10	1836925.20	11895105.89	211.44
8550.00	90.00	270.3	3089.26	182.76	-5834.20	0.00	5835.10	1836875.20	11895106.16	211.44
*** TD (at MD = 8589.23)										
8589.23	90.00	270.3	3089.26	182.97	-5873.43	0.00	5874.33	1836835.97	11895106.37	211.44

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

COMMENTS

Action 82207

COMMENTS

Operator: Redwood Operating LLC PO Box 1370 Artesia, NM 88210	OGRID: 330211
	Action Number: 82207
	Action Type: [C-103] NOI Change of Plans (C-103A)

COMMENTS

Created By	Comment	Comment Date
kpickford	KP GEO review 2/18/2022	2/18/2022

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 82207

CONDITIONS

Operator: Redwood Operating LLC PO Box 1370 Artesia, NM 88210	OGRID: 330211
	Action Number: 82207
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
jagarcia	None	6/9/2022