

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

Form C-101

August 1, 2011

Permit 286717

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address MANZANO LLC P.O. Box 1737 Roswell, NM 88202		2. OGRID Number 231429
		3. API Number 30-025-48404
4. Property Code 329688	5. Property Name VINDICATOR CANYON 22 27 STATE UNIT CNLC	6. Well No. 003H

7. Surface Location

UL - Lot N	Section 15	Township 17S	Range 36E	Lot Idn N	Feet From 715	N/S Line S	Feet From 2310	E/W Line W	County Lea
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8. Proposed Bottom Hole Location

UL - Lot N	Section 27	Township 17S	Range 36E	Lot Idn N	Feet From 50	N/S Line S	Feet From 2310	E/W Line W	County Lea
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9. Pool Information

WC-025 G-09 S173615C;UPPER PENN	98333
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Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type Private	15. Ground Level Elevation 3846
16. Multiple N	17. Proposed Depth 23100	18. Formation Canyon	19. Contractor	20. Spud Date 1/4/2021
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits**21. Proposed Casing and Cement Program**

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	54.5	2150	1250	0
Int1	12.25	9.625	40	9000	1880	0
Int1	12.25	9.625	43.5	11100	470	9000
Prod	8.5	5.5	20	23100	4120	0

Casing/Cement Program: Additional Comments

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22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Double Ram	5000	5000	CAMERON
Annular	5000	5000	SCHAFFER

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒ if applicable.		OIL CONSERVATION DIVISION	
Signature:			
Printed Name: Electronically filed by Michael Hanagan	Approved By: Paul F Kautz		
Title: Manager	Title: Geologist		
Email Address: mike@manzanoenergy.com	Approved Date: 1/26/2021	Expiration Date: 1/26/2023	
Date: 9/17/2020	Phone: 575-623-1996	Conditions of Approval Attached	

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State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011

Submit one copy to appropriate
District Office

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code 98333	Pool Name WC-025 G-09 S17361SC; UPPER PENN
Property Code	Property Name VINDICATOR CANYON STATE UNIT 22-27 CNLC	Well Number 3H
OGRID No. 231429	Operator Name MANZANO LLC	Elevation 3846'

Surface Location

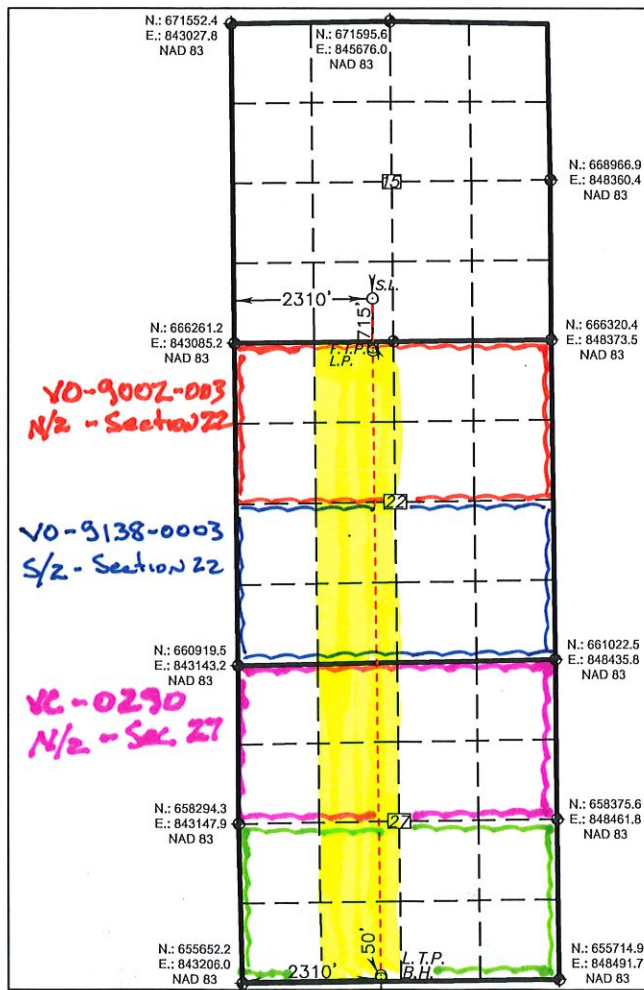
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	15	17 S	36 E		715	SOUTH	2310	WEST	LEA

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
N	27	17 S	36 E		50	SOUTH	2310	WEST	LEA

Dedicated Acres 320.0	Joint or Infill	Consolidation Code	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



SURFACE LOCATION

Lat - N 32.829701°
Long - W 103.343493°
NMSPC- N 667002.0
E 845387.3
(NAD-83)

FIRST TAKE POINT

100' FNL & 2310' FWL
Lat - N 32.827461°
Long - W 103.343489°
NMSPC- N 666187.0
E 845396.1
(NAD-83)

LANDING POINT

150' FNL & 2310' FWL
Lat - N 32.827323°
Long - W 103.343489°
NMSPC- N 666137.0
E 845396.7
(NAD-83)

LAST TAKE POINT

100' FSL & 2310' FWL
Lat - N 32.798856°
Long - W 103.343423°
NMSPC- N 655779.6
E 845513.7
(NAD-83)

PROPOSED BOTTOM
HOLE LOCATION

Lat - N 32.798718°
Long - W 103.343421°
NMSPC- N 655729.6
E 845514.8
(NAD-83)

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.

Mike Hanagan 9/5/20
Signature Date

MIKE HANAGAN
Printed Name

mike@manzanoenergy.com
Email Address

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.

SEPTEMBER 2, 2020

Date Surveyed

Signature & Seal of
Professional Surveyor

Certificate No. Gary L. Jones 7977
BASIN SURVEYS

0' 1500' 3000' 4500' 6000'
SCALE: 1" = 3000'
WO Num.: 35165

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GAS CAPTURE PLAN

Date: 1/26/2021

☒ Original

Operator & OGRID No.: [231429] MANZANO LLC

☐ Amended - Reason for
Amendment:

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
VINDICATOR CANYON 22 27 STATE UNIT CNLC #003H	30-025-48404	N-15-17S-36E	0715S 2310W	1000	None	

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to TARGA MIDSTREAM SERVICES LLC and will be connected to TARGA MIDSTREAM SERVICES LLC Low Pressure gathering system located in Lea County, New Mexico. It will require 0' of pipeline to connect the facility to Low Pressure gathering system. MANZANO LLC provides (periodically) to TARGA MIDSTREAM SERVICES LLC a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, MANZANO LLC and TARGA MIDSTREAM SERVICES LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at TARGA MIDSTREAM SERVICES LLC Processing Plant located in Sec. 34, Twn. 14S, Rng. 33E, Lea County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on TARGA MIDSTREAM SERVICES LLC system at that time. Based on current information, it is MANZANO LLC's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
 - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
 - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
 - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

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Form APD Comments

Permit 286717

PERMIT COMMENTS

Operator Name and Address: MANZANO LLC [231429] P.O. Box 1737 Roswell, NM 88202		API Number: 30-025-48404
		Well: VINDICATOR CANYON 22 27 STATE UNIT CNLC #003H

Created By	Comment	Comment Date
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Form APD Conditions

Permit 286717

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: MANZANO LLC [231429] P.O. Box 1737 Roswell, NM 88202	API Number: 30-025-48404
	Well: VINDICATOR CANYON 22 27 STATE UNIT CNLC #003H

OCD Reviewer	Condition
pkautz	Notify OCD 24 hours prior to casing & cement
pkautz	Will require a File As Drilled C-102 and a Directional Survey with the C-104
pkautz	1) SURFACE & INTERMEDIATE CASING - Cement must circulate to surface -- 2) PRODUCTION CASING - Cement must tie back into intermediate casing --
pkautz	If cement does not circulate to surface, must run temperature survey or other log to determine top of cement
pkautz	Surface casing must be set 25' below top of Rustler Anhydrite in order to seal off protectable water
pkautz	1)- The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud 2)- Drilling Sundries Form C-103 (Casing and Cement test are to be submitted within 10 days 3)- Completion Reports & Logs are to be submitted within 45 days 4)- Deviation / Directional Drill Survey are to be filed with or prior to C-104
pkautz	It is the operator's responsibility to monitor cancellation dates of approved APDs. APD's are good for 2 years and may be extended for one year. Only one 1 year extension will be granted if submitted by C-103 before expiration date. After expiration date or after a 1 year extension must submit new APD. If an APD expires and if site construction has occurred, site remediation is required
pkautz	Stage Tool 1) Must notify OCD Hobbs Office prior to running Stage Tool at 5753703186 2) If using Stage Tool on Surface casing, Stage Tool must be set greater than 350' from surface and a minimum of 200 feet above surface shoe. 3) When using a Stage Tool on Intermediate or Production Casing Stage must be a minimum of 50 feet below previous casing shoe.

Manzano, LLC

DrilTech, LLC

Lea County, NM (NAD 83)
Vindicator Canyon State Unit 27 CNLC #3H
Wellbore #1
Plan #1

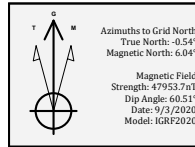


MANZANO
ENERGY PARTNERS



SURFACE LOCATION

US State Plane 1983
New Mexico Eastern Zone
Elevation: GL 3846' + RKB 20' @ 3866.00ft
Northing 667002.00 Easting 845387.30 Latitude 32° 49' 46.923 N Longitude 103° 20' 36.574 W

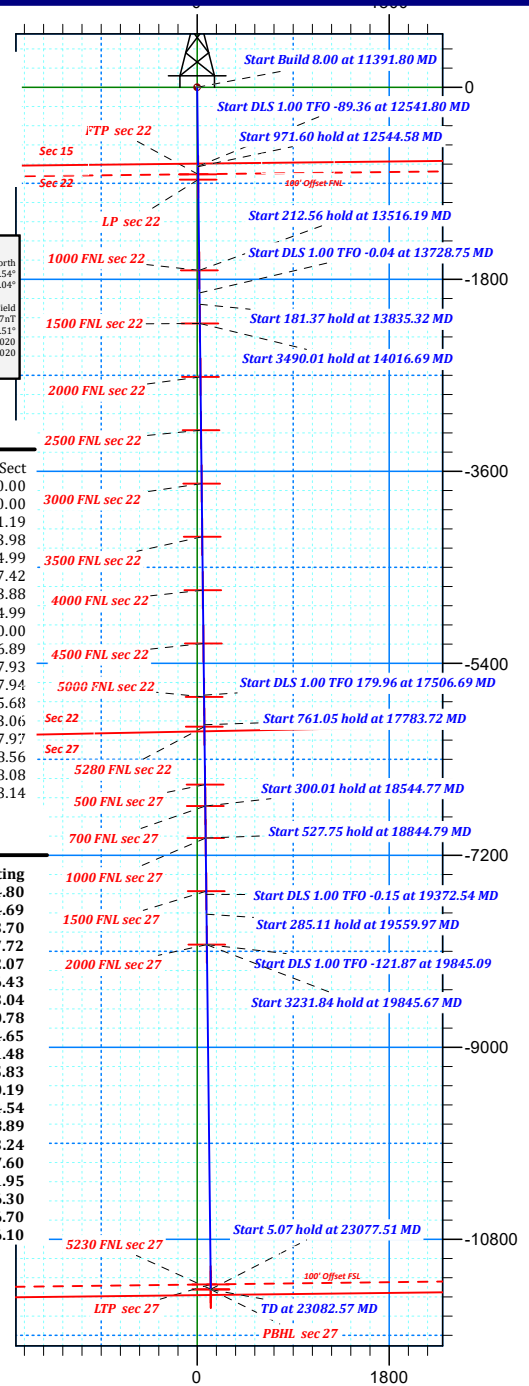


SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11391.80	0.00	0.00	11391.80	0.00	0.00	0.00	0.00	0.00
12541.80	92.00	179.38	12107.56	-741.15	8.01	8.00	179.38	741.19
12544.58	92.00	179.35	12107.46	-743.93	8.04	1.00	-89.36	743.98
13516.19	92.00	179.35	12073.55	-1714.88	19.00	0.00	0.00	1714.99
13728.75	92.00	179.35	12066.13	-1927.30	21.40	0.00	0.00	1927.42
13835.32	93.07	179.35	12061.42	-2033.76	22.60	1.00	-0.04	2033.88
14016.69	93.07	179.35	12051.72	-2214.85	24.65	0.00	0.00	2214.99
17506.69	93.07	179.35	11865.05	-5699.64	64.04	0.00	0.00	5700.00
17783.72	90.30	179.35	11856.93	-5976.51	67.16	1.00	179.96	5976.89
18544.77	90.30	179.35	11853.00	-6737.50	75.74	0.00	0.00	6737.93
18844.79	90.30	179.35	11851.45	-7037.49	79.12	0.00	0.00	7037.94
19372.54	90.30	179.35	11848.73	-7565.20	85.07	0.00	0.00	7565.68
19559.97	92.17	179.35	11844.70	-7752.57	87.19	1.00	-0.15	7753.06
19845.09	92.17	179.35	11833.90	-8037.46	90.42	0.00	0.00	8037.97
19845.67	92.17	179.34	11833.88	-8038.05	90.43	1.00	-121.87	8038.56
23077.51	92.17	179.34	11711.68	-11267.36	127.39	0.00	0.00	11268.08
23082.57	92.17	179.34	11711.49	-11272.42	127.45	0.00	0.00	11273.14

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL sec 27	11711.49	-11272.42	127.50	655729.60	845514.80
5230 FNL sec 27	11711.68	-11267.36	127.39	655734.66	845514.69
LTP sec 27	11713.28	-11222.42	126.40	655779.60	845513.70
2000 FNL sec 27	11833.90	-8037.46	90.42	658964.55	845477.72
1500 FNL sec 27	11848.60	-7537.48	84.77	659464.54	845472.07
1000 FNL sec 27	11853.00	-7037.49	79.13	659964.52	845466.43
700 FNL sec 27	11853.00	-6737.50	75.74	660264.51	845463.04
500 FNL sec 27	11854.00	-6537.51	73.48	660464.51	845460.78
5280 FNL sec 22	11861.90	-5994.62	67.35	661007.39	845454.65
5000 FNL sec 22	11869.20	-5714.64	64.18	661287.38	845451.48
4500 FNL sec 22	11891.00	-5214.67	58.54	661787.34	845445.83
4000 FNL sec 22	11917.20	-4714.70	52.89	662287.31	845440.19
3500 FNL sec 22	11943.40	-4214.73	47.24	662787.28	845434.54
3000 FNL sec 22	11969.60	-3714.76	41.59	663287.25	845428.89
2500 FNL sec 22	11995.80	-3214.79	35.94	663787.22	845423.24
2000 FNL sec 22	12022.00	-2714.82	30.30	664287.18	845417.60
1500 FNL sec 22	12051.72	-2214.85	24.65	664787.15	845411.95
1000 FNL sec 22	12073.55	-1714.88	19.00	665287.12	845406.30
LP sec 22	12103.24	-865.00	9.40	666137.00	845396.70
FTP sec 22	12104.98	-815.00	8.80	666187.00	845396.10



Vertical Section at 179.35° (2000 ft/in)

Manzano, LLC

Lea County, NM (NAD 83)

Vindicator Canyon State Unit 22 27 CNLC #3H

Vindicator Canyon State Unit 27 CNLC #3H

Wellbore #1

Plan: Plan #1

Standard Planning Report

03 September, 2020

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project	Lea County, NM (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Vindicator Canyon State Unit 22 27 CNLC #3H				
Site Position:		Northing:	667,002.00 usft	Latitude:	32° 49' 46.923 N
From:	Map	Easting:	845,387.30 usft	Longitude:	103° 20' 36.574 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in		

Well	Vindicator Canyon State Unit 27 CNLC #3H					
Well Position	+N/-S	0.00 ft	Northing:	667,002.00 usft	Latitude:	32° 49' 46.923 N
	+E/-W	0.00 ft	Easting:	845,387.30 usft	Longitude:	103° 20' 36.574 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,846.00 ft
Grid Convergence:		0.54 °				

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	9/3/2020	6.57	60.51	47,953.69190526

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	179.35

Plan Survey Tool Program	Date	9/3/2020		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	23,082.57	Plan #1 (Wellbore #1)	MWD
				MWD - Standard

Planning Report

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Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11,391.80	0.00	0.00	11,391.80	0.00	0.00	0.00	0.00	0.00	0.00	
12,541.80	92.00	179.38	12,107.56	-741.15	8.01	8.00	8.00	0.00	179.38	
12,544.59	92.00	179.35	12,107.46	-743.93	8.04	1.00	0.01	-1.00	-89.36	
13,516.19	92.00	179.35	12,073.55	-1,714.88	19.00	0.00	0.00	0.00	0.00	1000 FNL sec 22
13,728.75	92.00	179.35	12,066.13	-1,927.30	21.40	0.00	0.00	0.00	0.00	
13,835.32	93.07	179.35	12,061.42	-2,033.76	22.60	1.00	1.00	0.00	-0.04	
14,016.69	93.07	179.35	12,051.72	-2,214.85	24.65	0.00	0.00	0.00	0.00	1500 FNL sec 22
17,506.69	93.07	179.35	11,865.05	-5,699.64	64.04	0.00	0.00	0.00	0.00	
17,783.72	90.30	179.35	11,856.93	-5,976.51	67.16	1.00	-1.00	0.00	179.96	
18,544.77	90.30	179.35	11,853.00	-6,737.50	75.74	0.00	0.00	0.00	0.00	700 FNL sec 27
18,844.79	90.30	179.35	11,851.45	-7,037.49	79.12	0.00	0.00	0.00	0.00	1000 FNL sec 27
19,372.54	90.30	179.35	11,848.73	-7,565.20	85.07	0.00	0.00	0.00	0.00	
19,559.97	92.17	179.35	11,844.70	-7,752.57	87.19	1.00	1.00	0.00	-0.15	
19,845.09	92.17	179.35	11,833.90	-8,037.46	90.42	0.00	0.00	0.00	0.00	2000 FNL sec 27
19,845.67	92.17	179.34	11,833.88	-8,038.05	90.43	1.00	-0.53	-0.85	-121.87	
23,077.51	92.17	179.34	11,711.68	-11,267.36	127.39	0.00	0.00	0.00	0.00	5230 FNL sec 27
23,082.57	92.17	179.34	11,711.49	-11,272.42	127.45	0.00	0.00	0.00	0.00	PBHL sec 27

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00	

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey										
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5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,300.00	0.00	0.00	8,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,400.00	0.00	0.00	8,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,500.00	0.00	0.00	8,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,600.00	0.00	0.00	8,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,700.00	0.00	0.00	8,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,800.00	0.00	0.00	8,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,900.00	0.00	0.00	8,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,000.00	0.00	0.00	9,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,100.00	0.00	0.00	9,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,200.00	0.00	0.00	9,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,300.00	0.00	0.00	9,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,400.00	0.00	0.00	9,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,500.00	0.00	0.00	9,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,600.00	0.00	0.00	9,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,700.00	0.00	0.00	9,700.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,800.00	0.00	0.00	9,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,900.00	0.00	0.00	9,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
10,000.00	0.00	0.00	10,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
10,100.00	0.00	0.00	10,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
10,200.00	0.00	0.00	10,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
10,300.00	0.00	0.00	10,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
10,400.00	0.00	0.00	10,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
10,500.00	0.00	0.00	10,500.00	0.00	0.00	0.00	0.00	0.00	0.00	

Planning Report

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Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
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Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
10,600.00	0.00	0.00	10,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10,700.00	0.00	0.00	10,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10,800.00	0.00	0.00	10,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10,900.00	0.00	0.00	10,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11,000.00	0.00	0.00	11,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11,100.00	0.00	0.00	11,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11,200.00	0.00	0.00	11,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11,300.00	0.00	0.00	11,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11,391.80	0.00	0.00	11,391.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 8.00 at 11391.80 MD										
11,400.00	0.66	179.38	11,400.00	-0.05	0.00	0.05	8.00	8.00	8.00	0.00
11,500.00	8.66	179.38	11,499.59	-8.16	0.09	8.16	8.00	8.00	8.00	0.00
11,600.00	16.66	179.38	11,597.08	-30.05	0.32	30.05	8.00	8.00	8.00	0.00
11,700.00	24.66	179.38	11,690.58	-65.29	0.71	65.30	8.00	8.00	8.00	0.00
11,800.00	32.66	179.38	11,778.26	-113.21	1.22	113.21	8.00	8.00	8.00	0.00
11,900.00	40.66	179.38	11,858.41	-172.85	1.87	172.87	8.00	8.00	8.00	0.00
12,000.00	48.66	179.38	11,929.49	-243.08	2.63	243.09	8.00	8.00	8.00	0.00
12,100.00	56.66	179.38	11,990.10	-322.51	3.48	322.53	8.00	8.00	8.00	0.00
12,200.00	64.66	179.38	12,039.07	-409.60	4.43	409.63	8.00	8.00	8.00	0.00
12,300.00	72.66	179.38	12,075.43	-502.66	5.43	502.69	8.00	8.00	8.00	0.00
12,400.00	80.66	179.38	12,098.49	-599.88	6.48	599.91	8.00	8.00	8.00	0.00
12,500.00	88.66	179.38	12,107.80	-699.36	7.56	699.40	8.00	8.00	8.00	0.00
12,541.80	92.00	179.38	12,107.56	-741.15	8.01	741.19	8.00	8.00	8.00	0.00
Start DLS 1.00 TFO -89.36 at 12541.80 MD										
12,544.59	92.00	179.35	12,107.46	-743.93	8.04	743.98	1.00	0.01	-1.00	
Start 971.60 hold at 12544.58 MD										
12,600.00	92.00	179.35	12,105.53	-799.31	8.66	799.36	0.00	0.00	0.00	0.00
12,700.00	92.00	179.35	12,102.04	-899.24	9.79	899.30	0.00	0.00	0.00	0.00
12,800.00	92.00	179.35	12,098.55	-999.18	10.92	999.23	0.00	0.00	0.00	0.00
12,900.00	92.00	179.35	12,095.06	-1,099.11	12.05	1,099.17	0.00	0.00	0.00	0.00
13,000.00	92.00	179.35	12,091.57	-1,199.04	13.18	1,199.11	0.00	0.00	0.00	0.00
13,100.00	92.00	179.35	12,088.08	-1,298.97	14.30	1,299.05	0.00	0.00	0.00	0.00
13,200.00	92.00	179.35	12,084.59	-1,398.91	15.43	1,398.99	0.00	0.00	0.00	0.00
13,300.00	92.00	179.35	12,081.10	-1,498.84	16.56	1,498.93	0.00	0.00	0.00	0.00
13,400.00	92.00	179.35	12,077.61	-1,598.77	17.69	1,598.87	0.00	0.00	0.00	0.00
13,500.00	92.00	179.35	12,074.12	-1,698.70	18.82	1,698.81	0.00	0.00	0.00	0.00
13,516.19	92.00	179.35	12,073.55	-1,714.88	19.00	1,714.99	0.00	0.00	0.00	0.00
Start 212.56 hold at 13516.19 MD										
13,600.00	92.00	179.35	12,070.62	-1,798.64	19.95	1,798.75	0.00	0.00	0.00	0.00
13,700.00	92.00	179.35	12,067.13	-1,898.57	21.07	1,898.69	0.00	0.00	0.00	0.00
13,728.75	92.00	179.35	12,066.13	-1,927.30	21.40	1,927.42	0.00	0.00	0.00	0.00
Start DLS 1.00 TFO -0.04 at 13728.75 MD										
13,800.00	92.71	179.35	12,063.20	-1,998.48	22.20	1,998.61	1.00	1.00	1.00	0.00
13,835.32	93.07	179.35	12,061.42	-2,033.76	22.60	2,033.88	1.00	1.00	1.00	0.00
Start 181.37 hold at 13835.32 MD										
13,900.00	93.07	179.35	12,057.96	-2,098.34	23.33	2,098.47	0.00	0.00	0.00	0.00
14,000.00	93.07	179.35	12,052.61	-2,198.19	24.46	2,198.33	0.00	0.00	0.00	0.00
14,016.69	93.07	179.35	12,051.72	-2,214.85	24.65	2,214.99	0.00	0.00	0.00	0.00
Start 3490.01 hold at 14016.69 MD										
14,100.00	93.07	179.35	12,047.26	-2,298.04	25.59	2,298.18	0.00	0.00	0.00	0.00
14,200.00	93.07	179.35	12,041.92	-2,397.89	26.72	2,398.04	0.00	0.00	0.00	0.00
14,300.00	93.07	179.35	12,036.57	-2,497.74	27.85	2,497.90	0.00	0.00	0.00	0.00

Planning Report

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Design:	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
14,400.00	93.07	179.35	12,031.22	-2,597.59	28.97	2,597.75	0.00	0.00	0.00	
14,500.00	93.07	179.35	12,025.87	-2,697.44	30.10	2,697.61	0.00	0.00	0.00	
14,600.00	93.07	179.35	12,020.52	-2,797.29	31.23	2,797.47	0.00	0.00	0.00	
14,700.00	93.07	179.35	12,015.17	-2,897.14	32.36	2,897.33	0.00	0.00	0.00	
14,800.00	93.07	179.35	12,009.82	-2,997.00	33.49	2,997.18	0.00	0.00	0.00	
14,900.00	93.07	179.35	12,004.48	-3,096.85	34.62	3,097.04	0.00	0.00	0.00	
15,000.00	93.07	179.35	11,999.13	-3,196.70	35.75	3,196.90	0.00	0.00	0.00	
15,100.00	93.07	179.35	11,993.78	-3,296.55	36.87	3,296.75	0.00	0.00	0.00	
15,200.00	93.07	179.35	11,988.43	-3,396.40	38.00	3,396.61	0.00	0.00	0.00	
15,300.00	93.07	179.35	11,983.08	-3,496.25	39.13	3,496.47	0.00	0.00	0.00	
15,400.00	93.07	179.35	11,977.73	-3,596.10	40.26	3,596.32	0.00	0.00	0.00	
15,500.00	93.07	179.35	11,972.38	-3,695.95	41.39	3,696.18	0.00	0.00	0.00	
15,600.00	93.07	179.35	11,967.03	-3,795.80	42.52	3,796.04	0.00	0.00	0.00	
15,700.00	93.07	179.35	11,961.69	-3,895.65	43.65	3,895.89	0.00	0.00	0.00	
15,800.00	93.07	179.35	11,956.34	-3,995.50	44.77	3,995.75	0.00	0.00	0.00	
15,900.00	93.07	179.35	11,950.99	-4,095.35	45.90	4,095.61	0.00	0.00	0.00	
16,000.00	93.07	179.35	11,945.64	-4,195.20	47.03	4,195.46	0.00	0.00	0.00	
16,100.00	93.07	179.35	11,940.29	-4,295.05	48.16	4,295.32	0.00	0.00	0.00	
16,200.00	93.07	179.35	11,934.94	-4,394.90	49.29	4,395.18	0.00	0.00	0.00	
16,300.00	93.07	179.35	11,929.59	-4,494.75	50.42	4,495.04	0.00	0.00	0.00	
16,400.00	93.07	179.35	11,924.25	-4,594.60	51.55	4,594.89	0.00	0.00	0.00	
16,500.00	93.07	179.35	11,918.90	-4,694.45	52.67	4,694.75	0.00	0.00	0.00	
16,600.00	93.07	179.35	11,913.55	-4,794.30	53.80	4,794.61	0.00	0.00	0.00	
16,700.00	93.07	179.35	11,908.20	-4,894.15	54.93	4,894.46	0.00	0.00	0.00	
16,800.00	93.07	179.35	11,902.85	-4,994.00	56.06	4,994.32	0.00	0.00	0.00	
16,900.00	93.07	179.35	11,897.50	-5,093.86	57.19	5,094.18	0.00	0.00	0.00	
17,000.00	93.07	179.35	11,892.15	-5,193.71	58.32	5,194.03	0.00	0.00	0.00	
17,100.00	93.07	179.35	11,886.81	-5,293.56	59.45	5,293.89	0.00	0.00	0.00	
17,200.00	93.07	179.35	11,881.46	-5,393.41	60.57	5,393.75	0.00	0.00	0.00	
17,300.00	93.07	179.35	11,876.11	-5,493.26	61.70	5,493.60	0.00	0.00	0.00	
17,400.00	93.07	179.35	11,870.76	-5,593.11	62.83	5,593.46	0.00	0.00	0.00	
17,500.00	93.07	179.35	11,865.41	-5,692.96	63.96	5,693.32	0.00	0.00	0.00	
17,506.69	93.07	179.35	11,865.05	-5,699.64	64.04	5,700.00	0.00	0.00	0.00	
Start DLS 1.00 TFO 179.96 at 17506.69 MD										
17,600.00	92.13	179.35	11,860.82	-5,792.85	65.09	5,793.21	1.00	-1.00	0.00	
17,700.00	91.13	179.35	11,857.97	-5,892.80	66.22	5,893.17	1.00	-1.00	0.00	
17,783.72	90.30	179.35	11,856.93	-5,976.51	67.16	5,976.89	1.00	-1.00	0.00	
Start 761.05 hold at 17783.72 MD										
17,800.00	90.30	179.35	11,856.84	-5,992.78	67.34	5,993.16	0.00	0.00	0.00	
17,900.00	90.30	179.35	11,856.33	-6,092.78	68.47	6,093.16	0.00	0.00	0.00	
18,000.00	90.30	179.35	11,855.81	-6,192.77	69.60	6,193.16	0.00	0.00	0.00	
18,100.00	90.30	179.35	11,855.30	-6,292.76	70.72	6,293.16	0.00	0.00	0.00	
18,200.00	90.30	179.35	11,854.78	-6,392.75	71.85	6,393.16	0.00	0.00	0.00	
18,300.00	90.30	179.35	11,854.26	-6,492.74	72.98	6,493.15	0.00	0.00	0.00	
18,400.00	90.30	179.35	11,853.75	-6,592.74	74.11	6,593.15	0.00	0.00	0.00	
18,500.00	90.30	179.35	11,853.23	-6,692.73	75.23	6,693.15	0.00	0.00	0.00	
18,544.77	90.30	179.35	11,853.00	-6,737.50	75.74	6,737.93	0.00	0.00	0.00	
Start 300.01 hold at 18544.77 MD										
18,600.00	90.30	179.35	11,852.72	-6,792.72	76.36	6,793.15	0.00	0.00	0.00	
18,700.00	90.30	179.35	11,852.20	-6,892.71	77.49	6,893.15	0.00	0.00	0.00	
18,800.00	90.30	179.35	11,851.68	-6,992.71	78.61	6,993.15	0.00	0.00	0.00	
18,844.79	90.30	179.35	11,851.45	-7,037.49	79.12	7,037.94	0.00	0.00	0.00	
Start 527.75 hold at 18844.79 MD										

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
18,900.00	90.30	179.35	11,851.17	-7,092.70	79.74	7,093.15	0.00	0.00	0.00
19,000.00	90.30	179.35	11,850.65	-7,192.69	80.87	7,193.15	0.00	0.00	0.00
19,100.00	90.30	179.35	11,850.13	-7,292.68	81.99	7,293.14	0.00	0.00	0.00
19,200.00	90.30	179.35	11,849.62	-7,392.68	83.12	7,393.14	0.00	0.00	0.00
19,300.00	90.30	179.35	11,849.10	-7,492.67	84.25	7,493.14	0.00	0.00	0.00
19,372.54	90.30	179.35	11,848.73	-7,565.20	85.07	7,565.68	0.00	0.00	0.00
Start DLS 1.00 TFO -0.15 at 19372.54 MD									
19,400.00	90.57	179.35	11,848.52	-7,592.66	85.38	7,593.14	1.00	1.00	0.00
19,500.00	91.57	179.35	11,846.65	-7,692.63	86.51	7,693.12	1.00	1.00	0.00
19,559.97	92.17	179.35	11,844.70	-7,752.57	87.19	7,753.06	1.00	1.00	0.00
Start 285.11 hold at 19559.97 MD									
19,600.00	92.17	179.35	11,843.18	-7,792.57	87.64	7,793.06	0.00	0.00	0.00
19,700.00	92.17	179.35	11,839.39	-7,892.49	88.78	7,892.99	0.00	0.00	0.00
19,800.00	92.17	179.35	11,835.61	-7,992.41	89.91	7,992.92	0.00	0.00	0.00
19,845.09	92.17	179.35	11,833.90	-8,037.46	90.42	8,037.97	0.00	0.00	0.00
Start DLS 1.00 TFO -121.87 at 19845.09									
19,845.67	92.17	179.34	11,833.88	-8,038.05	90.43	8,038.56	1.00	-0.53	-0.85
Start 3231.84 hold at 19845.67 MD									
19,900.00	92.17	179.34	11,831.82	-8,092.33	91.05	8,092.85	0.00	0.00	0.00
20,000.00	92.17	179.34	11,828.04	-8,192.25	92.19	8,192.77	0.00	0.00	0.00
20,100.00	92.17	179.34	11,824.26	-8,292.18	93.34	8,292.70	0.00	0.00	0.00
20,200.00	92.17	179.34	11,820.48	-8,392.10	94.48	8,392.63	0.00	0.00	0.00
20,300.00	92.17	179.34	11,816.70	-8,492.02	95.62	8,492.56	0.00	0.00	0.00
20,400.00	92.17	179.34	11,812.92	-8,591.94	96.77	8,592.49	0.00	0.00	0.00
20,500.00	92.17	179.34	11,809.14	-8,691.86	97.91	8,692.42	0.00	0.00	0.00
20,600.00	92.17	179.34	11,805.36	-8,791.79	99.06	8,792.34	0.00	0.00	0.00
20,700.00	92.17	179.34	11,801.58	-8,891.71	100.20	8,892.27	0.00	0.00	0.00
20,800.00	92.17	179.34	11,797.79	-8,991.63	101.34	8,992.20	0.00	0.00	0.00
20,900.00	92.17	179.34	11,794.01	-9,091.55	102.49	9,092.13	0.00	0.00	0.00
21,000.00	92.17	179.34	11,790.23	-9,191.47	103.63	9,192.06	0.00	0.00	0.00
21,100.00	92.17	179.34	11,786.45	-9,291.40	104.77	9,291.99	0.00	0.00	0.00
21,200.00	92.17	179.34	11,782.67	-9,391.32	105.92	9,391.92	0.00	0.00	0.00
21,300.00	92.17	179.34	11,778.89	-9,491.24	107.06	9,491.84	0.00	0.00	0.00
21,400.00	92.17	179.34	11,775.11	-9,591.16	108.20	9,591.77	0.00	0.00	0.00
21,500.00	92.17	179.34	11,771.33	-9,691.08	109.35	9,691.70	0.00	0.00	0.00
21,600.00	92.17	179.34	11,767.55	-9,791.01	110.49	9,791.63	0.00	0.00	0.00
21,700.00	92.17	179.34	11,763.76	-9,890.93	111.64	9,891.56	0.00	0.00	0.00
21,800.00	92.17	179.34	11,759.98	-9,990.85	112.78	9,991.49	0.00	0.00	0.00
21,900.00	92.17	179.34	11,756.20	-10,090.77	113.92	10,091.42	0.00	0.00	0.00
22,000.00	92.17	179.34	11,752.42	-10,190.69	115.07	10,191.34	0.00	0.00	0.00
22,100.00	92.17	179.34	11,748.64	-10,290.62	116.21	10,291.27	0.00	0.00	0.00
22,200.00	92.17	179.34	11,744.86	-10,390.54	117.35	10,391.20	0.00	0.00	0.00
22,300.00	92.17	179.34	11,741.08	-10,490.46	118.50	10,491.13	0.00	0.00	0.00
22,400.00	92.17	179.34	11,737.30	-10,590.38	119.64	10,591.06	0.00	0.00	0.00
22,500.00	92.17	179.34	11,733.52	-10,690.30	120.78	10,690.99	0.00	0.00	0.00
22,600.00	92.17	179.34	11,729.74	-10,790.23	121.93	10,790.91	0.00	0.00	0.00
22,700.00	92.17	179.34	11,725.95	-10,890.15	123.07	10,890.84	0.00	0.00	0.00
22,800.00	92.17	179.34	11,722.17	-10,990.07	124.22	10,990.77	0.00	0.00	0.00
22,900.00	92.17	179.34	11,718.39	-11,089.99	125.36	11,090.70	0.00	0.00	0.00
23,000.00	92.17	179.34	11,714.61	-11,189.91	126.50	11,190.63	0.00	0.00	0.00
23,077.51	92.17	179.34	11,711.68	-11,267.36	127.39	11,268.08	0.00	0.00	0.00
Start 5.07 hold at 23077.51 MD									

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
23,082.57	92.17	179.34	11,711.49	-11,272.42	127.45	11,273.14	0.00	0.00	0.00
TD at 23082.57 MD									

Planning Report

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Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL sec 27 - plan misses target center by 0.05ft at 23082.57ft MD (11711.49 TVD, -11272.42 N, 127.45 E) - Point	0.00	0.00	11,711.49	-11,272.42	127.50	655,729.60	845,514.80	32° 47' 55.386 N	103° 20' 36.317 W
5230 FNL sec 27 - plan hits target center - Point	0.00	0.00	11,711.68	-11,267.36	127.39	655,734.67	845,514.69	32° 47' 55.436 N	103° 20' 36.318 W
LTP sec 27 - plan misses target center by 0.48ft at 23032.53ft MD (11713.38 TVD, -11222.42 N, 126.87 E) - Point	0.00	0.00	11,713.28	-11,222.42	126.40	655,779.60	845,513.70	32° 47' 55.881 N	103° 20' 36.325 W
2000 FNL sec 27 - plan hits target center - Point	0.00	0.00	11,833.90	-8,037.46	90.42	658,964.56	845,477.72	32° 48' 27.395 N	103° 20' 36.397 W
1500 FNL sec 27 - plan misses target center by 0.27ft at 19344.81ft MD (11848.87 TVD, -7537.48 N, 84.75 E) - Point	0.00	0.00	11,848.60	-7,537.48	84.77	659,464.54	845,472.07	32° 48' 32.342 N	103° 20' 36.408 W
1000 FNL sec 27 - plan misses target center by 1.55ft at 18844.78ft MD (11851.45 TVD, -7037.48 N, 79.12 E) - Point	0.00	0.00	11,853.00	-7,037.49	79.13	659,964.53	845,466.42	32° 48' 37.289 N	103° 20' 36.419 W
700 FNL sec 27 - plan hits target center - Point	0.00	0.00	11,853.00	-6,737.50	75.74	660,264.52	845,463.04	32° 48' 40.258 N	103° 20' 36.426 W
500 FNL sec 27 - plan misses target center by 0.03ft at 18344.76ft MD (11854.03 TVD, -6537.51 N, 73.48 E) - Point	0.00	0.00	11,854.00	-6,537.51	73.48	660,464.51	845,460.78	32° 48' 42.236 N	103° 20' 36.431 W
5280 FNL sec 22 - plan misses target center by 5.07ft at 17801.81ft MD (11856.83 TVD, -5994.59 N, 67.36 E) - Point	0.00	0.00	11,861.90	-5,994.62	67.35	661,007.40	845,454.64	32° 48' 47.608 N	103° 20' 36.443 W
5000 FNL sec 22 - plan misses target center by 4.92ft at 17521.48ft MD (11864.28 TVD, -5714.41 N, 64.20 E) - Point	0.00	0.01	11,869.20	-5,714.64	64.18	661,287.38	845,451.48	32° 48' 50.378 N	103° 20' 36.449 W
4500 FNL sec 22 - plan misses target center by 0.04ft at 17020.99ft MD (11891.03 TVD, -5214.67 N, 58.55 E) - Point	0.00	0.00	11,891.00	-5,214.67	58.54	661,787.35	845,445.83	32° 48' 55.325 N	103° 20' 36.461 W
4000 FNL sec 22 - plan misses target center by 0.61ft at 16520.31ft MD (11917.81 TVD, -4714.73 N, 52.90 E) - Point	0.00	0.00	11,917.20	-4,714.70	52.89	662,287.32	845,440.19	32° 49' 0.273 N	103° 20' 36.472 W
3500 FNL sec 22 - plan misses target center by 1.19ft at 16019.62ft MD (11944.59 TVD, -4214.79 N, 47.25 E) - Point	0.00	0.01	11,943.40	-4,214.73	47.24	662,787.29	845,434.54	32° 49' 5.220 N	103° 20' 36.483 W
3000 FNL sec 22 - plan misses target center by 1.77ft at 15518.93ft MD (11971.37 TVD, -3714.85 N, 41.60 E) - Point	0.00	0.00	11,969.60	-3,714.76	41.59	663,287.25	845,428.89	32° 49' 10.167 N	103° 20' 36.495 W
2500 FNL sec 22 - plan misses target center by 2.35ft at 15018.25ft MD (11998.15 TVD, -3214.92 N, 35.95 E) - Point	0.00	0.00	11,995.80	-3,214.79	35.94	663,787.22	845,423.24	32° 49' 15.114 N	103° 20' 36.506 W
2000 FNL sec 22 - plan misses target center by 2.93ft at 14517.56ft MD (12024.93 TVD, -2714.98 N, 30.30 E) - Point	0.00	0.00	12,022.00	-2,714.82	30.30	664,287.19	845,417.59	32° 49' 20.061 N	103° 20' 36.517 W
1500 FNL sec 22 - plan hits target center	0.00	0.00	12,051.72	-2,214.85	24.65	664,787.16	845,411.95	32° 49' 25.008 N	103° 20' 36.529 W

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

- Point									
1000 FNL sec 22	0.00	0.00	12,073.55	-1,714.88	19.00	665,287.13	845,406.30	32° 49' 29.955 N	103° 20' 36.540 W
- plan hits target center									
- Point									
LP sec 22	0.00	0.00	12,103.24	-865.00	9.40	666,137.00	845,396.70	32° 49' 38.364 N	103° 20' 36.559 W
- plan misses target center by 0.01ft at 12665.74ft MD (12103.23 TVD, -865.00 N, 9.41 E)									
- Point									
FTP sec 22	0.00	0.00	12,104.98	-815.00	8.80	666,187.00	845,396.10	32° 49' 38.859 N	103° 20' 36.561 W
- plan misses target center by 0.04ft at 12615.70ft MD (12104.98 TVD, -815.00 N, 8.84 E)									
- Point									

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
11,391.80	11,391.80	0.00	0.00	Start Build 8.00 at 11391.80 MD	
12,541.80	12,107.56	-741.15	8.01	Start DLS 1.00 TFO -89.36 at 12541.80 MD	
12,544.59	12,107.46	-743.93	8.04	Start 971.60 hold at 12544.58 MD	
13,516.19	12,073.55	-1,714.88	19.00	Start 212.56 hold at 13516.19 MD	
13,728.75	12,066.13	-1,927.30	21.40	Start DLS 1.00 TFO -0.04 at 13728.75 MD	
13,835.32	12,061.42	-2,033.76	22.60	Start 181.37 hold at 13835.32 MD	
14,016.69	12,051.72	-2,214.85	24.65	Start 3490.01 hold at 14016.69 MD	
17,506.69	11,865.05	-5,699.64	64.04	Start DLS 1.00 TFO 179.96 at 17506.69 MD	
17,783.72	11,856.93	-5,976.51	67.16	Start 761.05 hold at 17783.72 MD	
18,544.77	11,853.00	-6,737.50	75.74	Start 300.01 hold at 18544.77 MD	
18,844.79	11,851.45	-7,037.49	79.12	Start 527.75 hold at 18844.79 MD	
19,372.54	11,848.73	-7,565.20	85.07	Start DLS 1.00 TFO -0.15 at 19372.54 MD	
19,559.97	11,844.70	-7,752.57	87.19	Start 285.11 hold at 19559.97 MD	
19,845.09	11,833.90	-8,037.46	90.42	Start DLS 1.00 TFO -121.87 at 19845.09	
19,845.67	11,833.88	-8,038.05	90.43	Start 3231.84 hold at 19845.67 MD	
23,077.51	11,711.68	-11,267.36	127.39	Start 5.07 hold at 23077.51 MD	
23,082.57	11,711.49	-11,272.42	127.45	TD at 23082.57 MD	

Manzano, LLC

Lea County, NM (NAD 83)

Vindicator Canyon State Unit 22 27 CNLC #3H

Vindicator Canyon State Unit 27 CNLC #3H

Wellbore #1

Plan: Plan #1

Standard Planning Report - Geographic

03 September, 2020

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project	Lea County, NM (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Vindicator Canyon State Unit 22 27 CNLC #3H		
Site Position:		Northing:	667,002.00 usft
From:	Map	Easting:	845,387.30 usft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	32° 49' 46.923 N
		Longitude:	103° 20' 36.574 W

Well	Vindicator Canyon State Unit 27 CNLC #3H					
Well Position	+N/-S	0.00 ft	Northing:	667,002.00 usft	Latitude:	32° 49' 46.923 N
	+E/-W	0.00 ft	Easting:	845,387.30 usft	Longitude:	103° 20' 36.574 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	3,846.00 ft
Grid Convergence:		0.54 °				

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	9/3/2020	6.57	60.51	47,953.69190526

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	179.35

Plan Survey Tool Program	Date	9/3/2020		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	23,082.57 Plan #1 (Wellbore #1)	MWD	
			MWD - Standard	

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
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Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11,391.80	0.00	0.00	11,391.80	0.00	0.00	0.00	0.00	0.00	0.00	
12,541.80	92.00	179.38	12,107.56	-741.15	8.01	8.00	8.00	0.00	179.38	
12,544.59	92.00	179.35	12,107.46	-743.93	8.04	1.00	0.01	-1.00	-89.36	
13,516.19	92.00	179.35	12,073.55	-1,714.88	19.00	0.00	0.00	0.00	0.00	1000 FNL sec 22
13,728.75	92.00	179.35	12,066.13	-1,927.30	21.40	0.00	0.00	0.00	0.00	
13,835.32	93.07	179.35	12,061.42	-2,033.76	22.60	1.00	1.00	0.00	-0.04	
14,016.69	93.07	179.35	12,051.72	-2,214.85	24.65	0.00	0.00	0.00	0.00	1500 FNL sec 22
17,506.69	93.07	179.35	11,865.05	-5,699.64	64.04	0.00	0.00	0.00	0.00	
17,783.72	90.30	179.35	11,856.93	-5,976.51	67.16	1.00	-1.00	0.00	179.96	
18,544.77	90.30	179.35	11,853.00	-6,737.50	75.74	0.00	0.00	0.00	0.00	700 FNL sec 27
18,844.79	90.30	179.35	11,851.45	-7,037.49	79.12	0.00	0.00	0.00	0.00	1000 FNL sec 27
19,372.54	90.30	179.35	11,848.73	-7,565.20	85.07	0.00	0.00	0.00	0.00	
19,559.97	92.17	179.35	11,844.70	-7,752.57	87.19	1.00	1.00	0.00	-0.15	
19,845.09	92.17	179.35	11,833.90	-8,037.46	90.42	0.00	0.00	0.00	0.00	2000 FNL sec 27
19,845.67	92.17	179.34	11,833.88	-8,038.05	90.43	1.00	-0.53	-0.85	-121.87	
23,077.51	92.17	179.34	11,711.68	-11,267.36	127.39	0.00	0.00	0.00	0.00	5230 FNL sec 27
23,082.57	92.17	179.34	11,711.49	-11,272.42	127.45	0.00	0.00	0.00	0.00	PBHL sec 27

Planning Report - Geographic

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Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
100.00	0.00	0.00	100.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
200.00	0.00	0.00	200.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
300.00	0.00	0.00	300.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
400.00	0.00	0.00	400.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
500.00	0.00	0.00	500.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
600.00	0.00	0.00	600.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
700.00	0.00	0.00	700.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
800.00	0.00	0.00	800.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
900.00	0.00	0.00	900.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
1,700.00	0.00	0.00	1,700.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
1,900.00	0.00	0.00	1,900.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
2,100.00	0.00	0.00	2,100.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
2,300.00	0.00	0.00	2,300.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
2,400.00	0.00	0.00	2,400.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
2,600.00	0.00	0.00	2,600.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
2,700.00	0.00	0.00	2,700.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
2,800.00	0.00	0.00	2,800.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
2,900.00	0.00	0.00	2,900.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
3,100.00	0.00	0.00	3,100.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
3,200.00	0.00	0.00	3,200.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
3,300.00	0.00	0.00	3,300.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
3,400.00	0.00	0.00	3,400.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
3,500.00	0.00	0.00	3,500.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
3,600.00	0.00	0.00	3,600.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
3,700.00	0.00	0.00	3,700.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
3,800.00	0.00	0.00	3,800.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
3,900.00	0.00	0.00	3,900.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
4,100.00	0.00	0.00	4,100.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
4,200.00	0.00	0.00	4,200.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
4,300.00	0.00	0.00	4,300.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
4,400.00	0.00	0.00	4,400.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
4,500.00	0.00	0.00	4,500.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
4,600.00	0.00	0.00	4,600.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
4,700.00	0.00	0.00	4,700.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
4,800.00	0.00	0.00	4,800.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
4,900.00	0.00	0.00	4,900.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
5,000.00	0.00	0.00	5,000.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
5,100.00	0.00	0.00	5,100.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
5,200.00	0.00	0.00	5,200.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
5,300.00	0.00	0.00	5,300.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,400.00	0.00	0.00	5,400.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
5,500.00	0.00	0.00	5,500.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
5,600.00	0.00	0.00	5,600.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
5,700.00	0.00	0.00	5,700.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
5,800.00	0.00	0.00	5,800.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
5,900.00	0.00	0.00	5,900.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
6,000.00	0.00	0.00	6,000.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
6,100.00	0.00	0.00	6,100.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
6,200.00	0.00	0.00	6,200.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
6,300.00	0.00	0.00	6,300.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
6,400.00	0.00	0.00	6,400.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
6,500.00	0.00	0.00	6,500.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
6,600.00	0.00	0.00	6,600.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
6,700.00	0.00	0.00	6,700.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
6,800.00	0.00	0.00	6,800.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
6,900.00	0.00	0.00	6,900.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
7,000.00	0.00	0.00	7,000.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
7,100.00	0.00	0.00	7,100.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
7,200.00	0.00	0.00	7,200.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
7,300.00	0.00	0.00	7,300.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
7,400.00	0.00	0.00	7,400.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
7,500.00	0.00	0.00	7,500.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
7,600.00	0.00	0.00	7,600.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
7,700.00	0.00	0.00	7,700.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
7,800.00	0.00	0.00	7,800.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
7,900.00	0.00	0.00	7,900.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
8,000.00	0.00	0.00	8,000.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
8,100.00	0.00	0.00	8,100.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
8,200.00	0.00	0.00	8,200.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
8,300.00	0.00	0.00	8,300.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
8,400.00	0.00	0.00	8,400.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
8,500.00	0.00	0.00	8,500.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
8,600.00	0.00	0.00	8,600.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
8,700.00	0.00	0.00	8,700.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
8,800.00	0.00	0.00	8,800.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
8,900.00	0.00	0.00	8,900.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
9,000.00	0.00	0.00	9,000.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
9,100.00	0.00	0.00	9,100.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
9,200.00	0.00	0.00	9,200.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
9,300.00	0.00	0.00	9,300.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
9,400.00	0.00	0.00	9,400.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
9,500.00	0.00	0.00	9,500.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
9,600.00	0.00	0.00	9,600.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
9,700.00	0.00	0.00	9,700.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
9,800.00	0.00	0.00	9,800.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
9,900.00	0.00	0.00	9,900.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
10,000.00	0.00	0.00	10,000.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
10,100.00	0.00	0.00	10,100.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
10,200.00	0.00	0.00	10,200.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
10,300.00	0.00	0.00	10,300.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
10,400.00	0.00	0.00	10,400.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
10,500.00	0.00	0.00	10,500.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
10,600.00	0.00	0.00	10,600.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
10,700.00	0.00	0.00	10,700.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
10,800.00	0.00	0.00	10,800.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
10,900.00	0.00	0.00	10,900.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
11,000.00	0.00	0.00	11,000.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
11,100.00	0.00	0.00	11,100.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
11,200.00	0.00	0.00	11,200.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
11,300.00	0.00	0.00	11,300.00	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
11,391.80	0.00	0.00	11,391.80	0.00	0.00	667,002.00	845,387.30	32° 49' 46.923 N	103° 20' 36.574 W	
Start Build 8.00 at 11391.80 MD										
11,400.00	0.66	179.38	11,400.00	-0.05	0.00	667,001.96	845,387.30	32° 49' 46.922 N	103° 20' 36.574 W	
11,500.00	8.66	179.38	11,499.59	-8.16	0.09	666,993.85	845,387.39	32° 49' 46.842 N	103° 20' 36.574 W	
11,600.00	16.66	179.38	11,597.08	-30.05	0.32	666,971.96	845,387.62	32° 49' 46.626 N	103° 20' 36.574 W	
11,700.00	24.66	179.38	11,690.58	-65.29	0.71	666,936.71	845,388.00	32° 49' 46.277 N	103° 20' 36.573 W	
11,800.00	32.66	179.38	11,778.26	-113.21	1.22	666,888.80	845,388.52	32° 49' 45.803 N	103° 20' 36.572 W	
11,900.00	40.66	179.38	11,858.41	-172.85	1.87	666,829.15	845,389.17	32° 49' 45.213 N	103° 20' 36.571 W	
12,000.00	48.66	179.38	11,929.49	-243.08	2.63	666,758.93	845,389.93	32° 49' 44.518 N	103° 20' 36.570 W	
12,100.00	56.66	179.38	11,990.10	-322.51	3.48	666,679.50	845,390.78	32° 49' 43.732 N	103° 20' 36.569 W	
12,200.00	64.66	179.38	12,039.07	-409.60	4.43	666,592.40	845,391.72	32° 49' 42.870 N	103° 20' 36.567 W	
12,300.00	72.66	179.38	12,075.43	-502.66	5.43	666,499.34	845,392.73	32° 49' 41.949 N	103° 20' 36.566 W	
12,400.00	80.66	179.38	12,098.49	-599.88	6.48	666,402.13	845,393.78	32° 49' 40.987 N	103° 20' 36.564 W	
12,500.00	88.66	179.38	12,107.80	-699.36	7.56	666,302.65	845,394.85	32° 49' 40.003 N	103° 20' 36.563 W	
12,541.80	92.00	179.38	12,107.56	-741.15	8.01	666,260.86	845,395.31	32° 49' 39.589 N	103° 20' 36.562 W	
Start DLS 1.00 TFO -89.36 at 12541.80 MD										
12,544.59	92.00	179.35	12,107.46	-743.93	8.04	666,258.07	845,395.34	32° 49' 39.562 N	103° 20' 36.562 W	
Start 971.60 hold at 12544.58 MD										
12,600.00	92.00	179.35	12,105.53	-799.31	8.66	666,202.70	845,395.96	32° 49' 39.014 N	103° 20' 36.561 W	
12,700.00	92.00	179.35	12,102.04	-899.24	9.79	666,102.76	845,397.09	32° 49' 38.025 N	103° 20' 36.558 W	
12,800.00	92.00	179.35	12,098.55	-999.18	10.92	666,002.83	845,398.22	32° 49' 37.036 N	103° 20' 36.556 W	
12,900.00	92.00	179.35	12,095.06	-1,099.11	12.05	665,902.90	845,399.35	32° 49' 36.048 N	103° 20' 36.554 W	
13,000.00	92.00	179.35	12,091.57	-1,199.04	13.18	665,802.97	845,400.48	32° 49' 35.059 N	103° 20' 36.552 W	
13,100.00	92.00	179.35	12,088.08	-1,298.97	14.30	665,703.03	845,401.60	32° 49' 34.070 N	103° 20' 36.549 W	
13,200.00	92.00	179.35	12,084.59	-1,398.91	15.43	665,603.10	845,402.73	32° 49' 33.081 N	103° 20' 36.547 W	
13,300.00	92.00	179.35	12,081.10	-1,498.84	16.56	665,503.17	845,403.86	32° 49' 32.092 N	103° 20' 36.545 W	
13,400.00	92.00	179.35	12,077.61	-1,598.77	17.69	665,403.24	845,404.99	32° 49' 31.104 N	103° 20' 36.543 W	
13,500.00	92.00	179.35	12,074.12	-1,698.70	18.82	665,303.30	845,406.12	32° 49' 30.115 N	103° 20' 36.540 W	
13,516.19	92.00	179.35	12,073.55	-1,714.88	19.00	665,287.13	845,406.30	32° 49' 29.955 N	103° 20' 36.540 W	
Start 212.56 hold at 13516.19 MD										
13,600.00	92.00	179.35	12,070.62	-1,798.64	19.95	665,203.37	845,407.25	32° 49' 29.126 N	103° 20' 36.538 W	
13,700.00	92.00	179.35	12,067.13	-1,898.57	21.07	665,103.44	845,408.37	32° 49' 28.137 N	103° 20' 36.536 W	
13,728.75	92.00	179.35	12,066.13	-1,927.30	21.40	665,074.71	845,408.70	32° 49' 27.853 N	103° 20' 36.535 W	
Start DLS 1.00 TFO -0.04 at 13728.75 MD										
13,800.00	92.71	179.35	12,063.20	-1,998.48	22.20	665,003.52	845,409.50	32° 49' 27.149 N	103° 20' 36.533 W	
13,835.32	93.07	179.35	12,061.42	-2,033.76	22.60	664,968.25	845,409.90	32° 49' 26.800 N	103° 20' 36.533 W	
Start 181.37 hold at 13835.32 MD										
13,900.00	93.07	179.35	12,057.96	-2,098.34	23.33	664,903.67	845,410.63	32° 49' 26.161 N	103° 20' 36.531 W	
14,000.00	93.07	179.35	12,052.61	-2,198.19	24.46	664,803.82	845,411.76	32° 49' 25.173 N	103° 20' 36.529 W	
14,016.69	93.07	179.35	12,051.72	-2,214.85	24.65	664,787.16	845,411.95	32° 49' 25.008 N	103° 20' 36.529 W	
Start 3490.01 hold at 14016.69 MD										
14,100.00	93.07	179.35	12,047.26	-2,298.04	25.59	664,703.97	845,412.89	32° 49' 24.185 N	103° 20' 36.527 W	
14,200.00	93.07	179.35	12,041.92	-2,397.89	26.72	664,604.12	845,414.02	32° 49' 23.197 N	103° 20' 36.524 W	
14,300.00	93.07	179.35	12,036.57	-2,497.74	27.85	664,504.27	845,415.14	32° 49' 22.209 N	103° 20' 36.522 W	
14,400.00	93.07	179.35	12,031.22	-2,597.59	28.97	664,404.42	845,416.27	32° 49' 21.221 N	103° 20' 36.520 W	
14,500.00	93.07	179.35	12,025.87	-2,697.44	30.10	664,304.57	845,417.40	32° 49' 20.233 N	103° 20' 36.518 W	
14,600.00	93.07	179.35	12,020.52	-2,797.29	31.23	664,204.72	845,418.53	32° 49' 19.245 N	103° 20' 36.515 W	

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,700.00	93.07	179.35	12,015.17	-2,897.14	32.36	664,104.87	845,419.66	32° 49' 18.257 N	103° 20' 36.513 W
14,800.00	93.07	179.35	12,009.82	-2,997.00	33.49	664,005.02	845,420.79	32° 49' 17.269 N	103° 20' 36.511 W
14,900.00	93.07	179.35	12,004.48	-3,096.85	34.62	663,905.17	845,421.92	32° 49' 16.281 N	103° 20' 36.509 W
15,000.00	93.07	179.35	11,999.13	-3,196.70	35.75	663,805.32	845,423.04	32° 49' 15.293 N	103° 20' 36.506 W
15,100.00	93.07	179.35	11,993.78	-3,296.55	36.87	663,705.46	845,424.17	32° 49' 14.305 N	103° 20' 36.504 W
15,200.00	93.07	179.35	11,988.43	-3,396.40	38.00	663,605.61	845,425.30	32° 49' 13.317 N	103° 20' 36.502 W
15,300.00	93.07	179.35	11,983.08	-3,496.25	39.13	663,505.76	845,426.43	32° 49' 12.329 N	103° 20' 36.499 W
15,400.00	93.07	179.35	11,977.73	-3,596.10	40.26	663,405.91	845,427.56	32° 49' 11.341 N	103° 20' 36.497 W
15,500.00	93.07	179.35	11,972.38	-3,695.95	41.39	663,306.06	845,428.69	32° 49' 10.353 N	103° 20' 36.495 W
15,600.00	93.07	179.35	11,967.03	-3,795.80	42.52	663,206.21	845,429.82	32° 49' 9.365 N	103° 20' 36.493 W
15,700.00	93.07	179.35	11,961.69	-3,895.65	43.65	663,106.36	845,430.94	32° 49' 8.377 N	103° 20' 36.490 W
15,800.00	93.07	179.35	11,956.34	-3,995.50	44.77	663,006.51	845,432.07	32° 49' 7.389 N	103° 20' 36.488 W
15,900.00	93.07	179.35	11,950.99	-4,095.35	45.90	662,906.66	845,433.20	32° 49' 6.401 N	103° 20' 36.486 W
16,000.00	93.07	179.35	11,945.64	-4,195.20	47.03	662,806.81	845,434.33	32° 49' 5.413 N	103° 20' 36.484 W
16,100.00	93.07	179.35	11,940.29	-4,295.05	48.16	662,706.96	845,435.46	32° 49' 4.425 N	103° 20' 36.481 W
16,200.00	93.07	179.35	11,934.94	-4,394.90	49.29	662,607.11	845,436.59	32° 49' 3.437 N	103° 20' 36.479 W
16,300.00	93.07	179.35	11,929.59	-4,494.75	50.42	662,507.26	845,437.72	32° 49' 2.449 N	103° 20' 36.477 W
16,400.00	93.07	179.35	11,924.25	-4,594.60	51.55	662,407.41	845,438.84	32° 49' 1.461 N	103° 20' 36.475 W
16,500.00	93.07	179.35	11,918.90	-4,694.45	52.67	662,307.56	845,439.97	32° 49' 0.473 N	103° 20' 36.472 W
16,600.00	93.07	179.35	11,913.55	-4,794.30	53.80	662,207.71	845,441.10	32° 48' 59.485 N	103° 20' 36.470 W
16,700.00	93.07	179.35	11,908.20	-4,894.15	54.93	662,107.86	845,442.23	32° 48' 58.497 N	103° 20' 36.468 W
16,800.00	93.07	179.35	11,902.85	-4,994.00	56.06	662,008.01	845,443.36	32° 48' 57.509 N	103° 20' 36.465 W
16,900.00	93.07	179.35	11,897.50	-5,093.86	57.19	661,908.16	845,444.49	32° 48' 56.521 N	103° 20' 36.463 W
17,000.00	93.07	179.35	11,892.15	-5,193.71	58.32	661,808.31	845,445.62	32° 48' 55.533 N	103° 20' 36.461 W
17,100.00	93.07	179.35	11,886.81	-5,293.56	59.45	661,708.46	845,446.74	32° 48' 54.545 N	103° 20' 36.459 W
17,200.00	93.07	179.35	11,881.46	-5,393.41	60.57	661,608.61	845,447.87	32° 48' 53.557 N	103° 20' 36.456 W
17,300.00	93.07	179.35	11,876.11	-5,493.26	61.70	661,508.76	845,449.00	32° 48' 52.569 N	103° 20' 36.454 W
17,400.00	93.07	179.35	11,870.76	-5,593.11	62.83	661,408.91	845,450.13	32° 48' 51.581 N	103° 20' 36.452 W
17,500.00	93.07	179.35	11,865.41	-5,692.96	63.96	661,309.06	845,451.26	32° 48' 50.593 N	103° 20' 36.450 W
17,506.69	93.07	179.35	11,865.05	-5,699.64	64.04	661,302.38	845,451.33	32° 48' 50.527 N	103° 20' 36.449 W
Start DLS 1.00 TFO 179.96 at 17506.69 MD									
17,600.00	92.13	179.35	11,860.82	-5,792.85	65.09	661,209.17	845,452.39	32° 48' 49.605 N	103° 20' 36.447 W
17,700.00	91.13	179.35	11,857.97	-5,892.80	66.22	661,109.22	845,453.52	32° 48' 48.616 N	103° 20' 36.445 W
17,783.72	90.30	179.35	11,856.93	-5,976.51	67.16	661,025.51	845,454.46	32° 48' 47.787 N	103° 20' 36.443 W
Start 761.05 hold at 17783.72 MD									
17,800.00	90.30	179.35	11,856.84	-5,992.78	67.34	661,009.23	845,454.64	32° 48' 47.626 N	103° 20' 36.443 W
17,900.00	90.30	179.35	11,856.33	-6,092.78	68.47	660,909.24	845,455.77	32° 48' 46.637 N	103° 20' 36.441 W
18,000.00	90.30	179.35	11,855.81	-6,192.77	69.60	660,809.25	845,456.90	32° 48' 45.647 N	103° 20' 36.438 W
18,100.00	90.30	179.35	11,855.30	-6,292.76	70.72	660,709.26	845,458.02	32° 48' 44.658 N	103° 20' 36.436 W
18,200.00	90.30	179.35	11,854.78	-6,392.75	71.85	660,609.27	845,459.15	32° 48' 43.669 N	103° 20' 36.434 W
18,300.00	90.30	179.35	11,854.26	-6,492.74	72.98	660,509.27	845,460.28	32° 48' 42.679 N	103° 20' 36.432 W
18,400.00	90.30	179.35	11,853.75	-6,592.74	74.11	660,409.28	845,461.40	32° 48' 41.690 N	103° 20' 36.429 W
18,500.00	90.30	179.35	11,853.23	-6,692.73	75.23	660,309.29	845,462.53	32° 48' 40.701 N	103° 20' 36.427 W
18,544.77	90.30	179.35	11,853.00	-6,737.50	75.74	660,264.52	845,463.04	32° 48' 40.258 N	103° 20' 36.426 W
Start 300.01 hold at 18544.77 MD									
18,600.00	90.30	179.35	11,852.72	-6,792.72	76.36	660,209.30	845,463.66	32° 48' 39.711 N	103° 20' 36.425 W
18,700.00	90.30	179.35	11,852.20	-6,892.71	77.49	660,109.30	845,464.79	32° 48' 38.722 N	103° 20' 36.423 W
18,800.00	90.30	179.35	11,851.68	-6,992.71	78.61	660,009.31	845,465.91	32° 48' 37.732 N	103° 20' 36.420 W
18,844.79	90.30	179.35	11,851.45	-7,037.49	79.12	659,964.53	845,466.42	32° 48' 37.289 N	103° 20' 36.419 W
Start 527.75 hold at 18844.79 MD									
18,900.00	90.30	179.35	11,851.17	-7,092.70	79.74	659,909.32	845,467.04	32° 48' 36.743 N	103° 20' 36.418 W
19,000.00	90.30	179.35	11,850.65	-7,192.69	80.87	659,809.33	845,468.17	32° 48' 35.754 N	103° 20' 36.416 W
19,100.00	90.30	179.35	11,850.13	-7,292.68	81.99	659,709.34	845,469.29	32° 48' 34.764 N	103° 20' 36.414 W

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
19,200.00	90.30	179.35	11,849.62	-7,392.68	83.12	659,609.34	845,470.42	32° 48' 33.775 N	103° 20' 36.412 W	
19,300.00	90.30	179.35	11,849.10	-7,492.67	84.25	659,509.35	845,471.55	32° 48' 32.785 N	103° 20' 36.409 W	
19,372.54	90.30	179.35	11,848.73	-7,565.20	85.07	659,436.82	845,472.36	32° 48' 32.068 N	103° 20' 36.408 W	
Start DLS 1.00 TFO -0.15 at 19372.54 MD										
19,400.00	90.57	179.35	11,848.52	-7,592.66	85.38	659,409.36	845,472.67	32° 48' 31.796 N	103° 20' 36.407 W	
19,500.00	91.57	179.35	11,846.65	-7,692.63	86.51	659,309.39	845,473.80	32° 48' 30.807 N	103° 20' 36.405 W	
19,559.97	92.17	179.35	11,844.70	-7,752.57	87.19	659,249.45	845,474.48	32° 48' 30.214 N	103° 20' 36.403 W	
Start 285.11 hold at 19559.97 MD										
19,600.00	92.17	179.35	11,843.18	-7,792.57	87.64	659,209.45	845,474.94	32° 48' 29.818 N	103° 20' 36.402 W	
19,700.00	92.17	179.35	11,839.39	-7,892.49	88.78	659,109.53	845,476.07	32° 48' 28.829 N	103° 20' 36.400 W	
19,800.00	92.17	179.35	11,835.61	-7,992.41	89.91	659,009.61	845,477.21	32° 48' 27.841 N	103° 20' 36.398 W	
19,845.09	92.17	179.35	11,833.90	-8,037.46	90.42	658,964.56	845,477.72	32° 48' 27.395 N	103° 20' 36.397 W	
Start DLS 1.00 TFO -121.87 at 19845.09										
19,845.67	92.17	179.34	11,833.88	-8,038.05	90.43	658,963.97	845,477.73	32° 48' 27.389 N	103° 20' 36.397 W	
Start 3231.84 hold at 19845.67 MD										
19,900.00	92.17	179.34	11,831.82	-8,092.33	91.05	658,909.69	845,478.35	32° 48' 26.852 N	103° 20' 36.395 W	
20,000.00	92.17	179.34	11,828.04	-8,192.25	92.19	658,809.77	845,479.49	32° 48' 25.863 N	103° 20' 36.393 W	
20,100.00	92.17	179.34	11,824.26	-8,292.18	93.34	658,709.84	845,480.64	32° 48' 24.874 N	103° 20' 36.391 W	
20,200.00	92.17	179.34	11,820.48	-8,392.10	94.48	658,609.92	845,481.78	32° 48' 23.886 N	103° 20' 36.388 W	
20,300.00	92.17	179.34	11,816.70	-8,492.02	95.62	658,510.00	845,482.92	32° 48' 22.897 N	103° 20' 36.386 W	
20,400.00	92.17	179.34	11,812.92	-8,591.94	96.77	658,410.08	845,484.07	32° 48' 21.908 N	103° 20' 36.383 W	
20,500.00	92.17	179.34	11,809.14	-8,691.86	97.91	658,310.16	845,485.21	32° 48' 20.920 N	103° 20' 36.381 W	
20,600.00	92.17	179.34	11,805.36	-8,791.79	99.06	658,210.24	845,486.35	32° 48' 19.931 N	103° 20' 36.378 W	
20,700.00	92.17	179.34	11,801.58	-8,891.71	100.20	658,110.31	845,487.50	32° 48' 18.942 N	103° 20' 36.376 W	
20,800.00	92.17	179.34	11,797.79	-8,991.63	101.34	658,010.39	845,488.64	32° 48' 17.954 N	103° 20' 36.373 W	
20,900.00	92.17	179.34	11,794.01	-9,091.55	102.49	657,910.47	845,489.79	32° 48' 16.965 N	103° 20' 36.371 W	
21,000.00	92.17	179.34	11,790.23	-9,191.47	103.63	657,810.55	845,490.93	32° 48' 15.976 N	103° 20' 36.369 W	
21,100.00	92.17	179.34	11,786.45	-9,291.40	104.77	657,710.63	845,492.07	32° 48' 14.988 N	103° 20' 36.366 W	
21,200.00	92.17	179.34	11,782.67	-9,391.32	105.92	657,610.71	845,493.22	32° 48' 13.999 N	103° 20' 36.364 W	
21,300.00	92.17	179.34	11,778.89	-9,491.24	107.06	657,510.78	845,494.36	32° 48' 13.010 N	103° 20' 36.361 W	
21,400.00	92.17	179.34	11,775.11	-9,591.16	108.20	657,410.86	845,495.50	32° 48' 12.021 N	103° 20' 36.359 W	
21,500.00	92.17	179.34	11,771.33	-9,691.08	109.35	657,310.94	845,496.65	32° 48' 11.033 N	103° 20' 36.356 W	
21,600.00	92.17	179.34	11,767.55	-9,791.01	110.49	657,211.02	845,497.79	32° 48' 10.044 N	103° 20' 36.354 W	
21,700.00	92.17	179.34	11,763.76	-9,890.93	111.64	657,111.10	845,498.93	32° 48' 9.055 N	103° 20' 36.352 W	
21,800.00	92.17	179.34	11,759.98	-9,990.85	112.78	657,011.17	845,500.08	32° 48' 8.067 N	103° 20' 36.349 W	
21,900.00	92.17	179.34	11,756.20	-10,090.77	113.92	656,911.25	845,501.22	32° 48' 7.078 N	103° 20' 36.347 W	
22,000.00	92.17	179.34	11,752.42	-10,190.69	115.07	656,811.33	845,502.36	32° 48' 6.089 N	103° 20' 36.344 W	
22,100.00	92.17	179.34	11,748.64	-10,290.62	116.21	656,711.41	845,503.51	32° 48' 5.101 N	103° 20' 36.342 W	
22,200.00	92.17	179.34	11,744.86	-10,390.54	117.35	656,611.49	845,504.65	32° 48' 4.112 N	103° 20' 36.339 W	
22,300.00	92.17	179.34	11,741.08	-10,490.46	118.50	656,511.57	845,505.80	32° 48' 3.123 N	103° 20' 36.337 W	
22,400.00	92.17	179.34	11,737.30	-10,590.38	119.64	656,411.64	845,506.94	32° 48' 2.134 N	103° 20' 36.334 W	
22,500.00	92.17	179.34	11,733.52	-10,690.30	120.78	656,311.72	845,508.08	32° 48' 1.146 N	103° 20' 36.332 W	
22,600.00	92.17	179.34	11,729.74	-10,790.23	121.93	656,211.80	845,509.23	32° 48' 0.157 N	103° 20' 36.330 W	
22,700.00	92.17	179.34	11,725.95	-10,890.15	123.07	656,111.88	845,510.37	32° 47' 59.168 N	103° 20' 36.327 W	
22,800.00	92.17	179.34	11,722.17	-10,990.07	124.22	656,011.96	845,511.51	32° 47' 58.180 N	103° 20' 36.325 W	
22,900.00	92.17	179.34	11,718.39	-11,089.99	125.36	655,912.04	845,512.66	32° 47' 57.191 N	103° 20' 36.322 W	
23,000.00	92.17	179.34	11,714.61	-11,189.91	126.50	655,812.11	845,513.80	32° 47' 56.202 N	103° 20' 36.320 W	
23,077.51	92.17	179.34	11,711.68	-11,267.36	127.39	655,734.67	845,514.69	32° 47' 55.436 N	103° 20' 36.318 W	
Start 5.07 hold at 23077.51 MD										
23,082.57	92.17	179.34	11,711.49	-11,272.42	127.45	655,729.60	845,514.75	32° 47' 55.386 N	103° 20' 36.318 W	
TD at 23082.57 MD										

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL sec 27 - plan misses target center by 0.05ft at 23082.57ft MD (11711.49 TVD, -11272.42 N, 127.45 E) - Point	0.00	0.00	11,711.49	-11,272.42	127.50	655,729.60	845,514.80	32° 47' 55.386 N	103° 20' 36.317 W
5230 FNL sec 27 - plan hits target center - Point	0.00	0.00	11,711.68	-11,267.36	127.39	655,734.67	845,514.69	32° 47' 55.436 N	103° 20' 36.318 W
LTP sec 27 - plan misses target center by 0.48ft at 23032.53ft MD (11713.38 TVD, -11222.42 N, 126.87 E) - Point	0.00	0.00	11,713.28	-11,222.42	126.40	655,779.60	845,513.70	32° 47' 55.881 N	103° 20' 36.325 W
2000 FNL sec 27 - plan hits target center - Point	0.00	0.00	11,833.90	-8,037.46	90.42	658,964.56	845,477.72	32° 48' 27.395 N	103° 20' 36.397 W
1500 FNL sec 27 - plan misses target center by 0.27ft at 19344.81ft MD (11848.87 TVD, -7537.48 N, 84.75 E) - Point	0.00	0.00	11,848.60	-7,537.48	84.77	659,464.54	845,472.07	32° 48' 32.342 N	103° 20' 36.408 W
1000 FNL sec 27 - plan misses target center by 1.55ft at 18844.78ft MD (11851.45 TVD, -7037.48 N, 79.12 E) - Point	0.00	0.00	11,853.00	-7,037.49	79.13	659,964.53	845,466.42	32° 48' 37.289 N	103° 20' 36.419 W
700 FNL sec 27 - plan hits target center - Point	0.00	0.00	11,853.00	-6,737.50	75.74	660,264.52	845,463.04	32° 48' 40.258 N	103° 20' 36.426 W
500 FNL sec 27 - plan misses target center by 0.03ft at 18344.76ft MD (11854.03 TVD, -6537.51 N, 73.48 E) - Point	0.00	0.00	11,854.00	-6,537.51	73.48	660,464.51	845,460.78	32° 48' 42.236 N	103° 20' 36.431 W
5280 FNL sec 22 - plan misses target center by 5.07ft at 17801.81ft MD (11856.83 TVD, -5994.59 N, 67.36 E) - Point	0.00	0.00	11,861.90	-5,994.62	67.35	661,007.40	845,454.64	32° 48' 47.608 N	103° 20' 36.443 W
5000 FNL sec 22 - plan misses target center by 4.92ft at 17521.48ft MD (11864.28 TVD, -5714.41 N, 64.20 E) - Point	0.00	0.01	11,869.20	-5,714.64	64.18	661,287.38	845,451.48	32° 48' 50.378 N	103° 20' 36.449 W
4500 FNL sec 22 - plan misses target center by 0.04ft at 17020.99ft MD (11891.03 TVD, -5214.67 N, 58.55 E) - Point	0.00	0.00	11,891.00	-5,214.67	58.54	661,787.35	845,445.83	32° 48' 55.325 N	103° 20' 36.461 W
4000 FNL sec 22 - plan misses target center by 0.61ft at 16520.31ft MD (11917.81 TVD, -4714.73 N, 52.90 E) - Point	0.00	0.00	11,917.20	-4,714.70	52.89	662,287.32	845,440.19	32° 49' 0.273 N	103° 20' 36.472 W
3500 FNL sec 22 - plan misses target center by 1.19ft at 16019.62ft MD (11944.59 TVD, -4214.79 N, 47.25 E) - Point	0.00	0.01	11,943.40	-4,214.73	47.24	662,787.29	845,434.54	32° 49' 5.220 N	103° 20' 36.483 W
3000 FNL sec 22 - plan misses target center by 1.77ft at 15518.93ft MD (11971.37 TVD, -3714.85 N, 41.60 E) - Point	0.00	0.00	11,969.60	-3,714.76	41.59	663,287.25	845,428.89	32° 49' 10.167 N	103° 20' 36.495 W
2500 FNL sec 22 - plan misses target center by 2.35ft at 15018.25ft MD (11998.15 TVD, -3214.92 N, 35.95 E) - Point	0.00	0.00	11,995.80	-3,214.79	35.94	663,787.22	845,423.24	32° 49' 15.114 N	103° 20' 36.506 W
2000 FNL sec 22 - plan misses target center by 2.93ft at 14517.56ft MD (12024.93 TVD, -2714.98 N, 30.30 E) - Point	0.00	0.00	12,022.00	-2,714.82	30.30	664,287.19	845,417.59	32° 49' 20.061 N	103° 20' 36.517 W
1500 FNL sec 22 - plan hits target center	0.00	0.00	12,051.72	-2,214.85	24.65	664,787.16	845,411.95	32° 49' 25.008 N	103° 20' 36.529 W

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 27 CNLC #3H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RKB 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 CNLC #3H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 27 CNLC #3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

- Point										
1000 FNL sec 22	0.00	0.00	12,073.55	-1,714.88	19.00	665,287.13	845,406.30	32° 49' 29.955 N	103° 20' 36.540 W	
- plan hits target center										
- Point										
LP sec 22	0.00	0.00	12,103.24	-865.00	9.40	666,137.00	845,396.70	32° 49' 38.364 N	103° 20' 36.559 W	
- plan misses target center by 0.01ft at 12665.74ft MD (12103.23 TVD, -865.00 N, 9.41 E)										
- Point										
FTP sec 22	0.00	0.00	12,104.98	-815.00	8.80	666,187.00	845,396.10	32° 49' 38.859 N	103° 20' 36.561 W	
- plan misses target center by 0.04ft at 12615.70ft MD (12104.98 TVD, -815.00 N, 8.84 E)										
- Point										

Plan Annotations					
	Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
			+N/-S (ft)	+E/-W (ft)	
	11,391.80	11,391.80	0.00	0.00	Start Build 8.00 at 11391.80 MD
	12,541.80	12,107.56	-741.15	8.01	Start DLS 1.00 TFO -89.36 at 12541.80 MD
	12,544.59	12,107.46	-743.93	8.04	Start 971.60 hold at 12544.58 MD
	13,516.19	12,073.55	-1,714.88	19.00	Start 212.56 hold at 13516.19 MD
	13,728.75	12,066.13	-1,927.30	21.40	Start DLS 1.00 TFO -0.04 at 13728.75 MD
	13,835.32	12,061.42	-2,033.76	22.60	Start 181.37 hold at 13835.32 MD
	14,016.69	12,051.72	-2,214.85	24.65	Start 3490.01 hold at 14016.69 MD
	17,506.69	11,865.05	-5,699.64	64.04	Start DLS 1.00 TFO 179.96 at 17506.69 MD
	17,783.72	11,856.93	-5,976.51	67.16	Start 761.05 hold at 17783.72 MD
	18,544.77	11,853.00	-6,737.50	75.74	Start 300.01 hold at 18544.77 MD
	18,844.79	11,851.45	-7,037.49	79.12	Start 527.75 hold at 18844.79 MD
	19,372.54	11,848.73	-7,565.20	85.07	Start DLS 1.00 TFO -0.15 at 19372.54 MD
	19,559.97	11,844.70	-7,752.57	87.19	Start 285.11 hold at 19559.97 MD
	19,845.09	11,833.90	-8,037.46	90.42	Start DLS 1.00 TFO -121.87 at 19845.09
	19,845.67	11,833.88	-8,038.05	90.43	Start 3231.84 hold at 19845.67 MD
	23,077.51	11,711.68	-11,267.36	127.39	Start 5.07 hold at 23077.51 MD
	23,082.57	11,711.49	-11,272.42	127.45	TD at 23082.57 MD