

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 299713

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 30-025-49355
4. Property Code 330293	5. Property Name VINDICATOR CANYON STATE UNIT	6. Well No. 154H

7. Surface Location

UL - Lot M	Section 10	Township 17S	Range 36E	Lot Idn M	Feet From 715	N/S Line S	Feet From 660	E/W Line W	County Lea
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8. Proposed Bottom Hole Location

UL - Lot E	Section 22	Township 17S	Range 36E	Lot Idn E	Feet From 2590	N/S Line N	Feet From 660	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 State	15. Ground Level Elevation 3858
16. Multiple N	17. Proposed Depth 20400	18. Formation Pennsylvanian Shale	19. Contractor	20. Spud Date 9/1/2021
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	2120	1100	0
Int1	12.25	9.625	40	10400	1500	0
Prod	8.75	5.5	23	20400	2750	0

Casing/Cement Program: Additional Comments

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22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	5000	5000	NOV
Double Ram	5000	5000	NOV

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: 8/27/2021	Expiration Date: 8/27/2023
Date: 8/19/2021	Phone: 575-623-1996	Conditions of Approval Attached

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DISTRICT IV

1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax: (505) 476-3462State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-102

Revised August 1, 2011

Submit one copy to appropriate
District Office

OIL CONSERVATION DIVISION

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number 30-025-49355	Pool Code 98333	Pool Name WC-025- G-09 S173615C; UPPER PENN
Property Code 330293	Property Name VINDICATOR CANYON STATE UNIT	Well Number 154H
OGRID No. 231429	Operator Name MANZANO LLC	Elevation 3858'

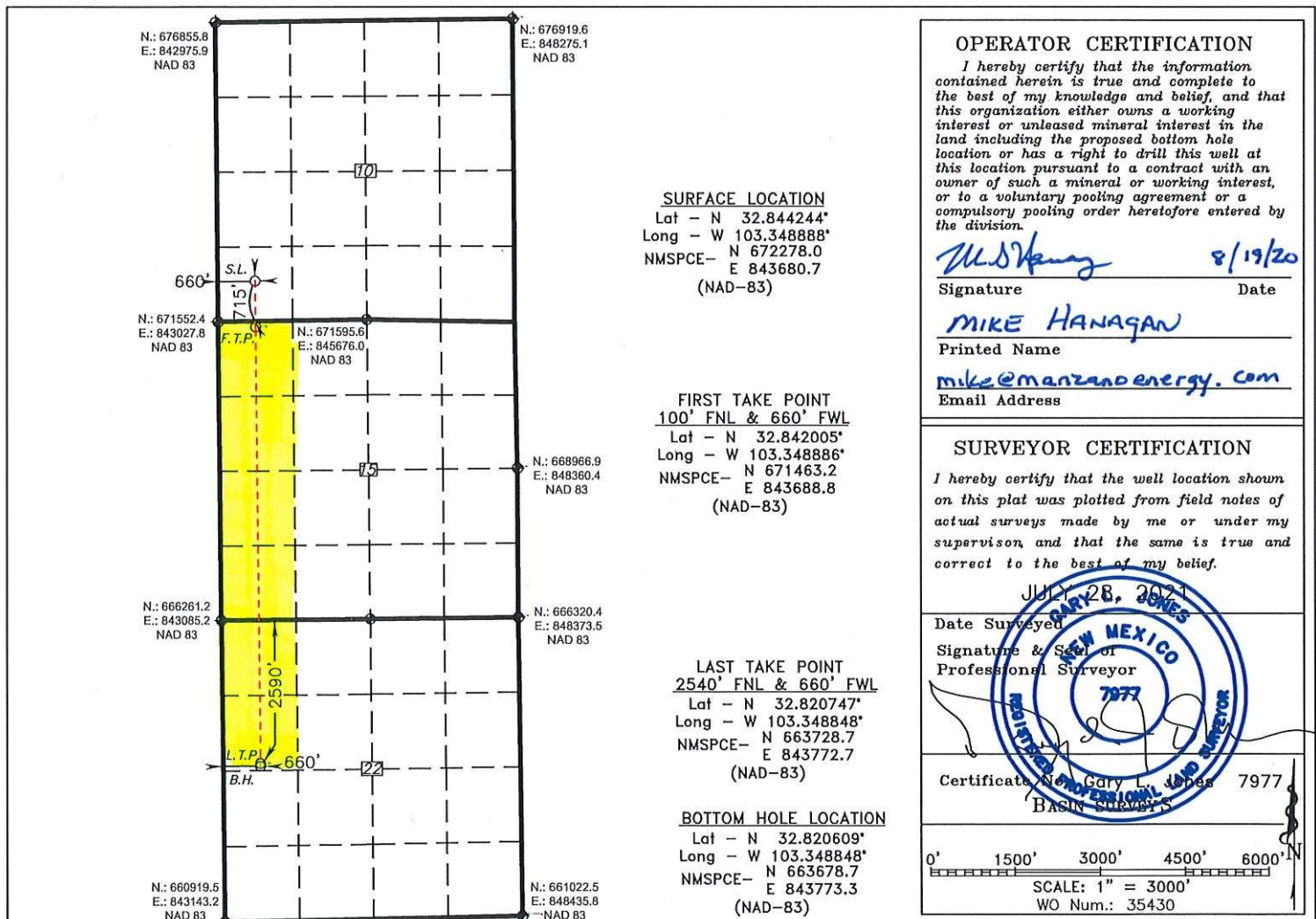
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	10	17 S	36 E		715	SOUTH	660	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
E	22	17 S	36 E		2590	NORTH	660	WEST	LEA

Dedicated Acres 240	Joint or Infill	Consolidation Code UNITIZED	Order No. R-21572	Vindicator Canyon State Unit					
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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

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Form APD Conditions

Permit 299713

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

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address:	MANZANO LLC [231429] P.O. Box 1737 Roswell, NM 88202	API Number:	30-025-49355
		Well:	VINDICATOR CANYON STATE UNIT #154H

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	The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud
pkautz	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system
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 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

Lea County, NM (NAD 83)

Vindicator Canyon State Unit ~~15-22~~

Vindicator Canyon State Unit ~~15-22 #41F~~
#1544

Wellbore #1

Plan: Design #2

Standard Planning Report

11 August, 2021





Stryker Directional Planning Report



Database:	EDM5000	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 15-22 #4H
Company:	Manzano	TVD Reference:	WELL @ 3880.00usft (22)
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3880.00usft (22)
Site:	Vindicator Canyon State Unit 15-22 #4H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 15-22 #4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

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

Site	Vindicator Canyon State Unit 15-22				
Site Position:		Northings:	672,277.9011 usft	Latitude:	32° 50' 39.278 N
From:	Lat/Long	Eastings:	843,680.7031 usft	Longitude:	103° 20' 55.997 W
Position Uncertainty:		0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:
					0.53°

Well	Vindicator Canyon State Unit 15-22 #4H				
Well Position	+N/-S	0.00 usft	Northings:	672,277.9011 usft	Latitude:
	+E/-W	0.00 usft	Eastings:	843,680.7031 usft	Longitude:
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:
					3,858.00 usft
					32° 50' 39.278 N
					103° 20' 55.997 W

Wellbore	Wellbore #1					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)	
	IGRF2020	9/15/2021	6.46	60.49	47,853.14154897	

Design	Design #2					
Audit Notes:						
Version:	Phase:	PLAN	Tie On Depth:			
Vertical Section:	Depth From (TVD)	+N/-S (usft)	+E/-W (usft)	Direction (°)		
	0.00	0.00	0.00	179.38		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11,413.80	0.00	0.00	11,413.80	0.00	0.00	0.00	0.00	0.00	0.00	
12,538.80	90.00	179.38	12,130.00	-716.16	7.71	8.00	8.00	0.00	179.38	
13,322.61	90.00	179.38	12,130.00	-1,499.91	16.15	0.00	0.00	0.00	0.00	1500' VS - VCSU 1:
13,372.70	91.00	179.38	12,129.56	-1,550.00	16.69	2.00	2.00	0.00	0.00	
18,323.37	91.00	179.38	12,043.00	-6,499.62	69.99	0.00	0.00	0.00	0.00	6500' VS - VCSU 1:
18,344.82	91.43	179.38	12,042.54	-6,521.07	70.22	2.00	2.00	0.00	0.00	
20,423.72	91.43	179.38	11,990.63	-8,599.20	92.60	0.00	0.00	0.00	0.00	PBHL - VCSU 15-2:



Stryker Directional Planning Report



Database:	EDM5000	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 15-22-#4H
Company:	Manzano	TVD Reference:	WELL @ 3880.00usft (22)
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3880.00usft (22)
Site:	Vindicator Canyon State Unit 15-22	North Reference:	Grid
Well:	Vindicator Canyon State Unit 15-22-#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00



Stryker Directional Planning Report



Database:	EDM5000	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit #5-22 #H
Company:	Manzano	TVD Reference:	WELL @ 3880.00usft (22')
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3880.00usft (22')
Site:	Vindicator Canyon State Unit #5-22	North Reference:	Grid
Well:	Vindicator Canyon State Unit #5-22 #H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
10,600.00	0.00	0.00	10,600.00	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



Stryker Directional
Planning Report



Database:	EDM5000	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 45-22-#H
Company:	Manzano	TVD Reference:	WELL @ 3880.00usft (22')
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3880.00usft (22')
Site:	Vindicator Canyon State Unit 45-22-#H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 45-22-#H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,800.00	0.00	0.00	10,800.00	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
11,000.00	0.00	0.00	11,000.00	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
11,200.00	0.00	0.00	11,200.00	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
11,400.00	0.00	0.00	11,400.00	0.00	0.00	0.00	0.00	0.00	0.00
11,413.80	0.00	0.00	11,413.80	0.00	0.00	0.00	0.00	0.00	0.00
KOP, Begin 8.00°/100° Build									
11,450.00	2.90	179.38	11,449.98	-0.91	0.01	0.91	8.00	8.00	0.00
11,500.00	6.90	179.38	11,499.79	-5.18	0.06	5.18	8.00	8.00	0.00
11,550.00	10.90	179.38	11,549.18	-12.91	0.14	12.91	8.00	8.00	0.00
11,600.00	14.90	179.38	11,597.91	-24.07	0.26	24.07	8.00	8.00	0.00
11,650.00	18.90	179.38	11,645.74	-38.59	0.42	38.60	8.00	8.00	0.00
11,700.00	22.90	179.38	11,692.44	-56.42	0.61	56.43	8.00	8.00	0.00
11,750.00	26.90	179.38	11,737.79	-77.47	0.83	77.47	8.00	8.00	0.00
11,800.00	30.90	179.38	11,781.55	-101.62	1.09	101.63	8.00	8.00	0.00
11,850.00	34.90	179.38	11,823.53	-128.77	1.39	128.78	8.00	8.00	0.00
11,900.00	38.90	179.38	11,863.51	-158.78	1.71	158.79	8.00	8.00	0.00
11,950.00	42.90	179.38	11,901.29	-191.51	2.06	191.52	8.00	8.00	0.00
12,000.00	46.90	179.38	11,936.71	-226.79	2.44	226.80	8.00	8.00	0.00
12,050.00	50.90	179.38	11,969.57	-264.45	2.85	264.47	8.00	8.00	0.00
12,100.00	54.90	179.38	11,999.73	-304.32	3.28	304.34	8.00	8.00	0.00
12,150.00	58.90	179.38	12,027.03	-346.19	3.73	346.21	8.00	8.00	0.00
12,200.00	62.90	179.38	12,051.35	-389.87	4.20	389.89	8.00	8.00	0.00
12,250.00	66.90	179.38	12,072.56	-435.13	4.69	435.16	8.00	8.00	0.00
12,300.00	70.90	179.38	12,090.56	-481.77	5.19	481.79	8.00	8.00	0.00
12,350.00	74.90	179.38	12,105.26	-529.54	5.70	529.57	8.00	8.00	0.00
12,400.00	78.90	179.38	12,116.59	-578.23	6.23	578.26	8.00	8.00	0.00
12,450.00	82.90	179.38	12,124.50	-627.59	6.76	627.62	8.00	8.00	0.00
12,500.00	86.90	179.38	12,128.95	-677.37	7.29	677.41	8.00	8.00	0.00
12,538.80	90.00	179.38	12,130.00	-716.16	7.71	716.20	8.00	8.00	0.00
Begin 90.00° Lateral									
12,600.00	90.00	179.38	12,130.00	-777.35	8.37	777.39	0.00	0.00	0.00
12,700.00	90.00	179.38	12,130.00	-877.34	9.45	877.39	0.00	0.00	0.00
12,800.00	90.00	179.38	12,130.00	-977.34	10.52	977.39	0.00	0.00	0.00
12,900.00	90.00	179.38	12,130.00	-1,077.33	11.60	1,077.39	0.00	0.00	0.00
13,000.00	90.00	179.38	12,130.00	-1,177.33	12.68	1,177.39	0.00	0.00	0.00
13,100.00	90.00	179.38	12,130.00	-1,277.32	13.75	1,277.39	0.00	0.00	0.00
13,200.00	90.00	179.38	12,130.00	-1,377.31	14.83	1,377.39	0.00	0.00	0.00
13,300.00	90.00	179.38	12,130.00	-1,477.31	15.91	1,477.39	0.00	0.00	0.00
13,322.61	90.00	179.38	12,130.00	-1,499.91	16.15	1,500.00	0.00	0.00	0.00
Begin 2.00°/100° Build									
13,372.70	91.00	179.38	12,129.56	-1,550.00	16.69	1,550.09	2.00	2.00	0.00
Hold 91.00° Inc									
13,400.00	91.00	179.38	12,129.08	-1,577.30	16.98	1,577.39	0.00	0.00	0.00
13,500.00	91.00	179.38	12,127.34	-1,677.28	18.06	1,677.37	0.00	0.00	0.00
13,600.00	91.00	179.38	12,125.59	-1,777.25	19.14	1,777.36	0.00	0.00	0.00
13,700.00	91.00	179.38	12,123.84	-1,877.23	20.21	1,877.34	0.00	0.00	0.00
13,800.00	91.00	179.38	12,122.09	-1,977.21	21.29	1,977.33	0.00	0.00	0.00
13,900.00	91.00	179.38	12,120.34	-2,077.19	22.37	2,077.31	0.00	0.00	0.00
14,000.00	91.00	179.38	12,118.59	-2,177.17	23.44	2,177.30	0.00	0.00	0.00
14,100.00	91.00	179.38	12,116.85	-2,277.15	24.52	2,277.28	0.00	0.00	0.00



Stryker Directional Planning Report



Database:	EDM5000	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 15-22 #4H
Company:	Manzano	TVD Reference:	WELL @ 3880.00usft (22')
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3880.00usft (22')
Site:	Vindicator Canyon State Unit 15-22	North Reference:	Grid
Well:	Vindicator Canyon State Unit 15-22 #4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,200.00	91.00	179.38	12,115.10	-2,377.13	25.60	2,377.27	0.00	0.00	0.00
14,300.00	91.00	179.38	12,113.35	-2,477.11	26.67	2,477.25	0.00	0.00	0.00
14,400.00	91.00	179.38	12,111.60	-2,577.09	27.75	2,577.23	0.00	0.00	0.00
14,500.00	91.00	179.38	12,109.85	-2,677.06	28.83	2,677.22	0.00	0.00	0.00
14,600.00	91.00	179.38	12,108.10	-2,777.04	29.90	2,777.20	0.00	0.00	0.00
14,700.00	91.00	179.38	12,106.35	-2,877.02	30.98	2,877.19	0.00	0.00	0.00
14,800.00	91.00	179.38	12,104.61	-2,977.00	32.06	2,977.17	0.00	0.00	0.00
14,900.00	91.00	179.38	12,102.86	-3,076.98	33.13	3,077.16	0.00	0.00	0.00
15,000.00	91.00	179.38	12,101.11	-3,176.96	34.21	3,177.14	0.00	0.00	0.00
15,100.00	91.00	179.38	12,099.36	-3,276.94	35.29	3,277.13	0.00	0.00	0.00
15,200.00	91.00	179.38	12,097.61	-3,376.92	36.36	3,377.11	0.00	0.00	0.00
15,300.00	91.00	179.38	12,095.86	-3,476.90	37.44	3,477.10	0.00	0.00	0.00
15,400.00	91.00	179.38	12,094.12	-3,576.87	38.52	3,577.08	0.00	0.00	0.00
15,500.00	91.00	179.38	12,092.37	-3,676.85	39.59	3,677.07	0.00	0.00	0.00
15,600.00	91.00	179.38	12,090.62	-3,776.83	40.67	3,777.05	0.00	0.00	0.00
15,700.00	91.00	179.38	12,088.87	-3,876.81	41.75	3,877.04	0.00	0.00	0.00
15,800.00	91.00	179.38	12,087.12	-3,976.79	42.82	3,977.02	0.00	0.00	0.00
15,900.00	91.00	179.38	12,085.37	-4,076.77	43.90	4,077.01	0.00	0.00	0.00
16,000.00	91.00	179.38	12,083.62	-4,176.75	44.98	4,176.99	0.00	0.00	0.00
16,100.00	91.00	179.38	12,081.88	-4,276.73	46.05	4,276.98	0.00	0.00	0.00
16,200.00	91.00	179.38	12,080.13	-4,376.71	47.13	4,376.96	0.00	0.00	0.00
16,300.00	91.00	179.38	12,078.38	-4,476.69	48.21	4,476.94	0.00	0.00	0.00
16,400.00	91.00	179.38	12,076.63	-4,576.66	49.28	4,576.93	0.00	0.00	0.00
16,500.00	91.00	179.38	12,074.88	-4,676.64	50.36	4,676.91	0.00	0.00	0.00
16,600.00	91.00	179.38	12,073.13	-4,776.62	51.44	4,776.90	0.00	0.00	0.00
16,700.00	91.00	179.38	12,071.38	-4,876.60	52.51	4,876.88	0.00	0.00	0.00
16,800.00	91.00	179.38	12,069.64	-4,976.58	53.59	4,976.87	0.00	0.00	0.00
16,900.00	91.00	179.38	12,067.89	-5,076.56	54.66	5,076.85	0.00	0.00	0.00
17,000.00	91.00	179.38	12,066.14	-5,176.54	55.74	5,176.84	0.00	0.00	0.00
17,100.00	91.00	179.38	12,064.39	-5,276.52	56.82	5,276.82	0.00	0.00	0.00
17,200.00	91.00	179.38	12,062.64	-5,376.50	57.89	5,376.81	0.00	0.00	0.00
17,300.00	91.00	179.38	12,060.89	-5,476.47	58.97	5,476.79	0.00	0.00	0.00
17,400.00	91.00	179.38	12,059.15	-5,576.45	60.05	5,576.78	0.00	0.00	0.00
17,500.00	91.00	179.38	12,057.40	-5,676.43	61.12	5,676.76	0.00	0.00	0.00
17,600.00	91.00	179.38	12,055.65	-5,776.41	62.20	5,776.75	0.00	0.00	0.00
17,700.00	91.00	179.38	12,053.90	-5,876.39	63.28	5,876.73	0.00	0.00	0.00
17,800.00	91.00	179.38	12,052.15	-5,976.37	64.35	5,976.72	0.00	0.00	0.00
17,900.00	91.00	179.38	12,050.40	-6,076.35	65.43	6,076.70	0.00	0.00	0.00
18,000.00	91.00	179.38	12,048.65	-6,176.33	66.51	6,176.68	0.00	0.00	0.00
18,100.00	91.00	179.38	12,046.91	-6,276.31	67.58	6,276.67	0.00	0.00	0.00
18,200.00	91.00	179.38	12,045.16	-6,376.28	68.66	6,376.65	0.00	0.00	0.00
18,300.00	91.00	179.38	12,043.41	-6,476.26	69.74	6,476.64	0.00	0.00	0.00
18,323.37	91.00	179.38	12,043.00	-6,499.62	69.99	6,500.00	0.00	0.00	0.00
Begin 2.00°/100' Build									
18,344.82	91.43	179.38	12,042.54	-6,521.07	70.22	6,521.45	2.00	2.00	0.00
Hold 91.43° Inc									
18,400.00	91.43	179.38	12,041.17	-6,576.23	70.81	6,576.61	0.00	0.00	0.00
18,500.00	91.43	179.38	12,038.67	-6,676.19	71.89	6,676.58	0.00	0.00	0.00
18,600.00	91.43	179.38	12,036.17	-6,776.16	72.97	6,776.55	0.00	0.00	0.00
18,700.00	91.43	179.38	12,033.68	-6,876.12	74.04	6,876.52	0.00	0.00	0.00
18,800.00	91.43	179.38	12,031.18	-6,976.08	75.12	6,976.49	0.00	0.00	0.00
18,900.00	91.43	179.38	12,028.68	-7,076.05	76.20	7,076.46	0.00	0.00	0.00
19,000.00	91.43	179.38	12,026.18	-7,176.01	77.27	7,176.43	0.00	0.00	0.00
19,100.00	91.43	179.38	12,023.69	-7,275.97	78.35	7,276.39	0.00	0.00	0.00



Stryker Directional Planning Report



Database:	EDM5000	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 15-22 #4H
Company:	Manzano	TVD Reference:	WELL @ 3880.00usft (22')
Project:	Lea County, NM (NAD 83)	North Reference:	WELL @ 3880.00usft (22')
Site:	Vindicator Canyon State Unit 15-22 #4H	Survey Calculation Method:	Grid
Well:	Vindicator Canyon State Unit 15-22 #4H		Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Planned Survey	Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
PBHL	19,200.00	91.43	179.38	12,021.19	-7,375.94	79.42	7,376.36	0.00	0.00	0.00
	19,300.00	91.43	179.38	12,018.69	-7,475.90	80.50	7,476.33	0.00	0.00	0.00
	19,400.00	91.43	179.38	12,016.19	-7,575.86	81.58	7,576.30	0.00	0.00	0.00
	19,500.00	91.43	179.38	12,013.70	-7,675.83	82.65	7,676.27	0.00	0.00	0.00
	19,600.00	91.43	179.38	12,011.20	-7,775.79	83.73	7,776.24	0.00	0.00	0.00
	19,700.00	91.43	179.38	12,008.70	-7,875.75	84.81	7,876.21	0.00	0.00	0.00
	19,800.00	91.43	179.38	12,006.21	-7,975.71	85.88	7,976.18	0.00	0.00	0.00
	19,900.00	91.43	179.38	12,003.71	-8,075.68	86.96	8,076.15	0.00	0.00	0.00
	20,000.00	91.43	179.38	12,001.21	-8,175.64	88.04	8,176.11	0.00	0.00	0.00
	20,100.00	91.43	179.38	11,998.71	-8,275.60	89.11	8,276.08	0.00	0.00	0.00
	20,200.00	91.43	179.38	11,996.22	-8,375.57	90.19	8,376.05	0.00	0.00	0.00
	20,300.00	91.43	179.38	11,993.72	-8,475.53	91.27	8,476.02	0.00	0.00	0.00
	20,400.00	91.43	179.38	11,991.22	-8,575.49	92.34	8,575.99	0.00	0.00	0.00
	20,423.72	91.43	179.38	11,990.63	-8,599.20	92.60	8,599.70	0.00	0.00	0.00

Design Targets	Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/S (usft)	+E/W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
	PBHL - VCSU 15-22 #4	0.00	0.00	11,990.63	-8,599.20	92.60	663,678.7000	843,773.3000	32° 49' 14.192 N	103° 20' 55.851 W
	- plan hits target center									
	- Point									
	8585' VS - VCSU 15-22 #4	0.00	0.00	11,991.00	-8,584.50	92.44	663,693.3988	843,773.1417	32° 49' 14.338 N	103° 20' 55.851 W
	- plan misses target center by 9.01usft at 20400.00usft MD (11991.22 TVD, -8575.49 N, 92.34 E)									
	- Point									
	LTP - VCSU 15-22 #4	0.00	0.00	11,991.88	-8,549.20	92.00	663,728.7000	843,772.7000	32° 49' 14.687 N	103° 20' 55.852 W
	- plan misses target center by 0.06usft at 20373.70usft MD (11991.88 TVD, -8549.20 N, 92.06 E)									
	- Point									
	6500' VS - VCSU 15-22 #4	0.00	0.01	12,043.00	-6,499.62	69.99	665,778.2780	843,750.6916	32° 49' 34.967 N	103° 20' 55.886 W
	- plan hits target center									
	- Point									
	1500' VS - VCSU 15-22 #4	0.00	0.00	12,130.00	-1,499.91	16.15	670,777.9882	843,696.8543	32° 50' 24.437 N	103° 20' 55.971 W
	- plan hits target center									
	- Point									
	FTP - VCSU 15-22 #4	0.00	0.00	12,130.00	-814.70	8.10	671,463.2000	843,688.8000	32° 50' 31.217 N	103° 20' 55.991 W
	- plan misses target center by 0.68usft at 12637.35usft MD (12130.00 TVD, -814.69 N, 8.77 E)									
	- Point									



Stryker Directional Planning Report



Database:	EDM5000	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 15-22 #4H
Company:	Manzano	TVD Reference:	WELL @ 3880.00ust (22')
Project:	Lea County, NM (NAD 83)	MD Reference:	WELL @ 3880.00ust (22')
Site:	Vindicator Canyon State Unit 15-22 #4H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 15-22 #4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #2		

Formations	Measured Depth (ust)	Vertical Depth (ust)	Name	Lithology	Dip (°)	Dip Direction (°)
	500.00	500.00	Triassic Reds Beds		0.00	
	1,980.00	1,990.00	Rustler		0.00	
	2,092.00	2,092.00	Top of Salt		0.00	
	3,227.00	3,227.00	Base Salt		0.00	
	3,260.00	3,260.00	Yates		0.00	
	4,270.00	4,270.00	Queen		0.00	
	5,110.00	5,110.00	San Andres		0.00	
	6,550.00	6,550.00	Glorieta		0.00	
	9,050.00	9,050.00	Third Sand		0.00	
	9,550.00	9,550.00	Wolfcamp		0.00	
	11,686.54	11,680.00	Canyon		0.00	
	12,313.98	12,095.00	Target Top		0.00	

Plan Annotations	Measured Depth (ust)	Vertical Depth (ust)	Local Coordinates +N-S (ust)	+E-W (ust)	Comment
	11,413.80	11,413.80	0.00	0.00	KOP Begin 8.00°/100' Build
	12,538.80	12,130.00	-716.16	7.71	Begin 90.00° Lateral
	13,322.61	12,130.00	-1,499.91	16.15	Begin 2.00°/100' Build
	13,372.70	12,129.56	-1,550.00	16.69	Hold 91.00° Inc
	18,323.37	12,043.00	-6,499.62	69.99	Begin 2.00°/100' Build
	18,344.82	12,042.54	-6,521.07	70.22	Hold 91.43° Inc
	20,423.72	11,990.63	-8,599.20	92.60	PBHL

State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description

Effective May 25, 2021

I. Operator: MANZANO, LLC **OGRID:** 231429 **Date:** 8 / 19 / 21

II. Type: ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
VINDICATOR CANYON	30-025-		715' FS &			
STATE UNIT #154H		M-10-17s-36e	660' FW	1500	2000	500

3

IV. Central Delivery Point Name: Facility ID fAPP2123059687 [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
VINDICATOR CANYON						
STATE UNIT #154H		<u>9/1/21</u>	<u>9/26/21</u>	<u>10/15/21</u>	<u>11/1/21</u>	<u>11/1/21</u>

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

**ATTACHMENT TO SECTION 1 OF THE NATURAL GAS
MANAGEMENT PLAN
FOR
MANZANO, LLC VINDICATOR CANYON STATE UNIT #154H**

Section VI. Separation Equipment

When the well is initially brought into the battery the production will go thru the "Test Separation Equipment" at the Central Battery and production from the well will first go into a 48" x 15' 500psi 2-Phase vertical Test Separator rated to handle 12500+ BFPD and 16+ MMCFGPD where the gas will be separated from the produced liquids with the residue gas then going into an identical 48" x 15' 500psi 2-phase vertical Test Gas Scrubber to remove any remaining liquids before then going into the gas sales line. The liquid that comes off of the initial 2-Phase vertical Test Separator will go into a 72" x 15' 500psi 3-phase horizontal Test Separator capable of handling 13,500 BFPD + 15 MMCF with the residue gas from this Test Separator going into the 48" x 15' 500psi 2-phase vertical Test Gas Scrubber to remove any remaining liquids before routing any remaining residue gas into the gas sales line. Additionally, there will be a choke on the wellhead which can be used to reduce flow into the separators should that be necessary.

Once the well has been on production for a 2-3 month test period, the well will be rotated into the "Production Separation Equipment" at the Central Battery Separation Equipment where the produced fluids from this and other Vindicator Canyon State Unit wells will first go into a 36" x 10' 500psi 2-phase vertical Production Separator that is rated to handle 4500 BFPD + 6.25 MMCFGPD where the gas will be separated from the produced liquids with the residue gas then going into a 30" x 10' 125psi 2-phase vertical Production Gas Scrubber that is rated to handle 3050 BFPD + 4.5 MMCFGPD which will remove any remaining liquids before then going into the gas sales line. The liquid that comes off of the initial 36" x 10' 125psi 2-Phase vertical Production Separator will go into a 48" x 15' 125psi 3-phase horizontal Production Separator capable of handling 6,500 BFPD + 14 MMCFGPD with the residue gas from this Production Separator going into the 30" x 10' 500psi 2-phase vertical Production Gas Scrubber to remove any remaining liquids before routing the remaining residue gas into the gas sales line. Any remaining fluid from the 48" x 15' 125psi 3-phase horizontal Production Separator will then be routed into a 8' x 20' 125# Heater Treater rated to handle 1500 BFPD + 6 MMCFGPD with the residue gas from the Heater Treater going into the 30" x 10' 500psi 2-phase vertical Production Gas Scrubber to remove any remaining liquids before routing the remaining residue gas into the gas sales line. After the well has been sent into the Production Separation Equipment, the production will be commingled with production from other wells in the Vindicator Canyon State Unit and the well will be periodically rotated into the Test Separation Equipment to measure production rates for individual wells.

We anticipate peak production for this well to be around 1500 BFPD + 2.0 MMCF which should be easily managed by the Separation Equipment described above which we have already installed for this well.

Section VII. Operational Practices as per 19.15.27.8 NMAC Subsections A through F

Subsection A: Manzano will maximize the recovery of natural gas and minimize the waste of natural gas by properly sizing and maintaining tanks, vessels and related equipment including thief hatches, enardo valves, flares and vapor recovery equipment. In all circumstances, Manzano shall flare rather than vent natural gas except when flaring is technically infeasible or when flaring would a risk to safe operations or personal safety.

Subsection B - Venting and flaring during drilling operations: Manzano will capture natural gas coming from the wellbore during drilling operations by routing any gas laden fluids through a mud gas separator with the gas then being routed to a flare stack located at least 100' from the wellbore. In addition, Manzano will be drilling the well with fluid sufficiently weighted to minimize the entry of natural gas into the wellbore. Any gas that is flared during the drilling operations will be reported pursuant to Paragraph (1) of Subsection G of 19.15.27.8 NMAC.

Subsection C - Venting and flaring during completion operations: After fracing, sand and the frac plugs will be cleaned out of the wellbore under controlled conditions (circulating 1 barrel in per 1 barrel out) that will reduce or eliminate the flow of gas to the atmosphere. After cleaning the well out, a packer with a rupture disk will be set by wireline and tubing with gas lift valves will be installed. The rupture disc will then be burst and flowback will commence.

During the initial flowback after the frac job the fluids will go directly into storage tanks until there is sufficient pressure to function a separator at which point the fluids will go into a separator that will remove the gas from the fluid and send the metered gas to an on-site flare stack until it is feasible to route the gas to the Central Battery.

As soon as it is practical, the produced fluids will be switched out of the flowback separator and into the flowline going to the Central Battery for separation and sale as soon as is feasible.

Any gas that is flared during the completion operations will be reported pursuant to Paragraph (1) of Subsection G of 19.15.27.8 NMAC.

Once the well dies or if the well does not flow, gas lift operations will begin utilizing gas from other wells in the Unit and production will be sent through the Separation Equipment at the Central Battery as described above.

Subsection D - Venting and flaring during production operations: Manzano shall not vent or flare natural gas during production operations except as allowed in 19.15.27.8.1,2 &4 NMAC. Any gas that is flared during production operations will be reported pursuant to Paragraph (1) of Subsection G of 19.15.27.8 NMAC.

Subsection E - Performance standards: The production facilities that will be utilized by this well have been designed to handle in excess of the anticipated maximum throughput and are

rated for pressures greater than the anticipated pressures. In addition, the facilities have been designed to minimize waste of natural gas.

The production storage tanks are equipped with an automated tank gauging system that reduces the need to open thief hatches on the tanks or to be on the tanks.

Manzano has installed an anchored flare stack over 100' away from the wellbore and production tanks that has an automatic ignitor and continuous pilot that will combust any natural gas routed to the flare stack and is capable of handling 5 MMCFGPD. Any natural gas routed through the flare stack will be metered and will be reported pursuant to Paragraph (1) of Subsection G of 19.15.27.8 NMAC. Natural gas will not be vented except as allowed in 19.15.27.8.1,2 &4 NMAC.

Low bleed pilots in Pneumatic valves will be installed if necessary.

Manzano will utilize SCADA to monitor production and equipment as well as to shut in the wellbore in case of an emergency or other situation that could result in gas being released to the atmosphere.

Should the sales line pressure reach the desired maximum operating pressure, the SCADA system will close the Emergency Shut Down Valve on the wellhead and send an alarm to production personnel. In the event that the ESD valve failed to close, gas would be routed to the flare stack with a continuous pilot. Any flared gas would be metered until such time that personnel could be dispatched to resolve the problem or manually shut the well in.

Manzano shall conduct weekly AVO inspections consisting of visual inspections, listening for leaks and smelling for odors, to confirm that all production equipment is operating properly and that there are no leaks or releases of natural gas except as allowed in Subsection D of 19.15.27.8 NMAC. The AVO inspection shall include the inspection of all components to identify defects and leaks. Any leaks that are found shall be immediately repaired. Manzano shall keep record of an AVO inspection for at least 5 years and shall make such record available for inspection by the Division upon request.

Subsection F – Measurement or estimation of vented and flared natural gas: Manzano shall measure or estimate the volume of natural gas that it vents, flares or beneficially uses during drilling, completion and production operations.

Manzano has installed equipment to measure the volume of natural gas flared from the Separation Equipment described in Section VI above as well as the process piping and vapor recovery equipment. Metering equipment has also been installed to measure the volume of natural gas delivered to the custody transfer point into the DCP gas line.

If metering is not practical due to circumstances such as low flow rate or low-pressure venting or flaring, Manzano shall estimate the volume of vented or flared natural gas using a verifiable methodology.

VIII. Best Management Practices to minimize venting during active and planned maintenance:

Manzano has installed an automated Emergency Shut Down Valve on wellhead to close the well in the event of an abnormal low or high-pressure occurrence on the flowline or within the facility.

Swabbing operations, if necessary, will be performed through the Separation Equipment described in Section VI above in a closed system.

If tubing is to be pulled, the well will be killed and pulled in an overbalanced condition to increase the safety of personnel and reduce gas emissions.

Should a production vessel need to be worked on, the vessel will be bleed down into the system to as low a pressure as is practical and then the vessel will be isolated by valves at the vessel to minimize the volume of gas to be bled off the vessel with none from the associated piping.

Manzano shall verbally notify the division as soon as is possible for any venting or flaring event that exceed 500 MCF or otherwise qualifies as a major release and shall follow up the verbal notification with the filing of a form C-129. On venting or flaring events that are less than 500 MCF, Manzano shall notify the division in writing by filing a form C-129 within 15 days of the event.

Section 2 – Enhanced Plan
EFFECTIVE APRIL 1, 2022

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☐ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

If Operator checks this box, Operator will select one of the following:

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature:



Printed Name: Mike Hanagan

Title: MANAGER

E-mail Address: mike@manzanoenergy.com

Date: 8/16/21

Phone: 575-623-1996 ext 310

OIL CONSERVATION DIVISION**(Only applicable when submitted as a standalone form)**

Approved By:

Title:

Approval Date:

Conditions of Approval:

Intent ☐ As Drilled ☐

API #		
Operator Name:	Property Name:	Well Number

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

Last Take Point (LTP)

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

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