

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 285976

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 30-025-48403
4. Property Code 329319	5. Property Name VINDICATOR CANYON 22 27 STATE UNIT	6. Well No. 002H

7. Surface Location

UL - Lot N	Section 15	Township 17S	Range 36E	Lot Idn N	Feet From 715	N/S Line S	Feet From 2295	E/W Line E	County Lea
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8. Proposed Bottom Hole Location

UL - Lot B	Section 22	Township 17S	Range 36E	Lot Idn B	Feet From 100	N/S Line N	Feet From 2295	E/W Line E	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 23060	18. Formation Pennsylvanian Shale	19. Contractor	20. Spud Date 1/1/2021
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	2150	1250	0
Int1	12.25	9.625	40	11100	2200	0
Prod	8.5	5.5	20	23060	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	SHAHER

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: 8/31/2020	Phone: 575-623-1996	Conditions of Approval Attached

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State 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	Pool Code	Pool Name
Property Code	Property Name	Well Number
	VINDICATOR CANYON STATE UNIT 22 27	2H
OGRID No.	Operator Name	Elevation
	MANZANO LLC	3846'

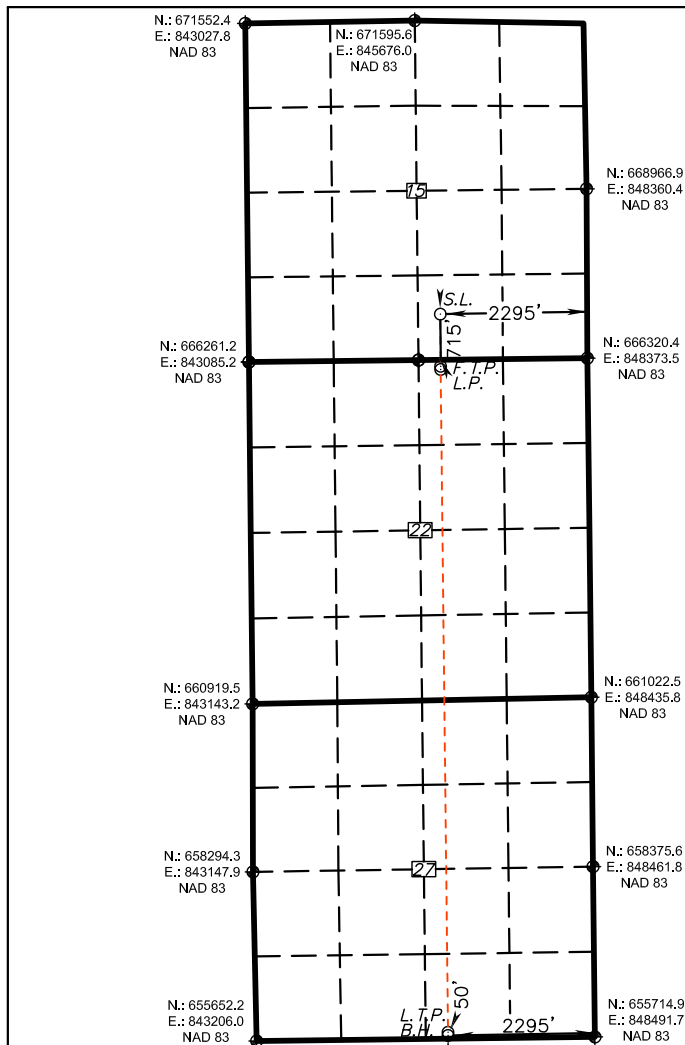
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	15	17 S	36 E		715	SOUTH	2295	EAST	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
O	27	17 S	36 E		50	SOUTH	2295	EAST	LEA
Dedicated Acres	Joint or Infill	Consolidation Code	Order No.						

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 32.829704°
Long - W 103.341253°
NMSPCE- N 667009.7
E 846075.2
(NAD-83)

FIRST TAKE POINT

100' FNL & 2295' FEL
Lat - N 32.827464°
Long - W 103.341263°
NMSPCE- N 666194.7
E 846079.9
(NAD-83)

LANDING POINT

150' FNL & 2295' FEL
Lat - N 32.827327°
Long - W 103.341263°
NMSPCE- N 666144.7
E 846080.4
(NAD-83)

LAST TAKE POINT

100' FSL & 2295' FEL
Lat - N 32.798860°
Long - W 103.341204°
NMSPCE- N 665787.7
E 846195.8
(NAD-83)

PROPOSED BOTTOM HOLE LOCATION

Lat - N 32.798723°
Long - W 103.341203°
NMSPCE- N 655737.7
E 846196.3
(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.

Signature _____ Date _____

Printed Name _____

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.

AUGUST 24, 2020

Date Surveyed _____

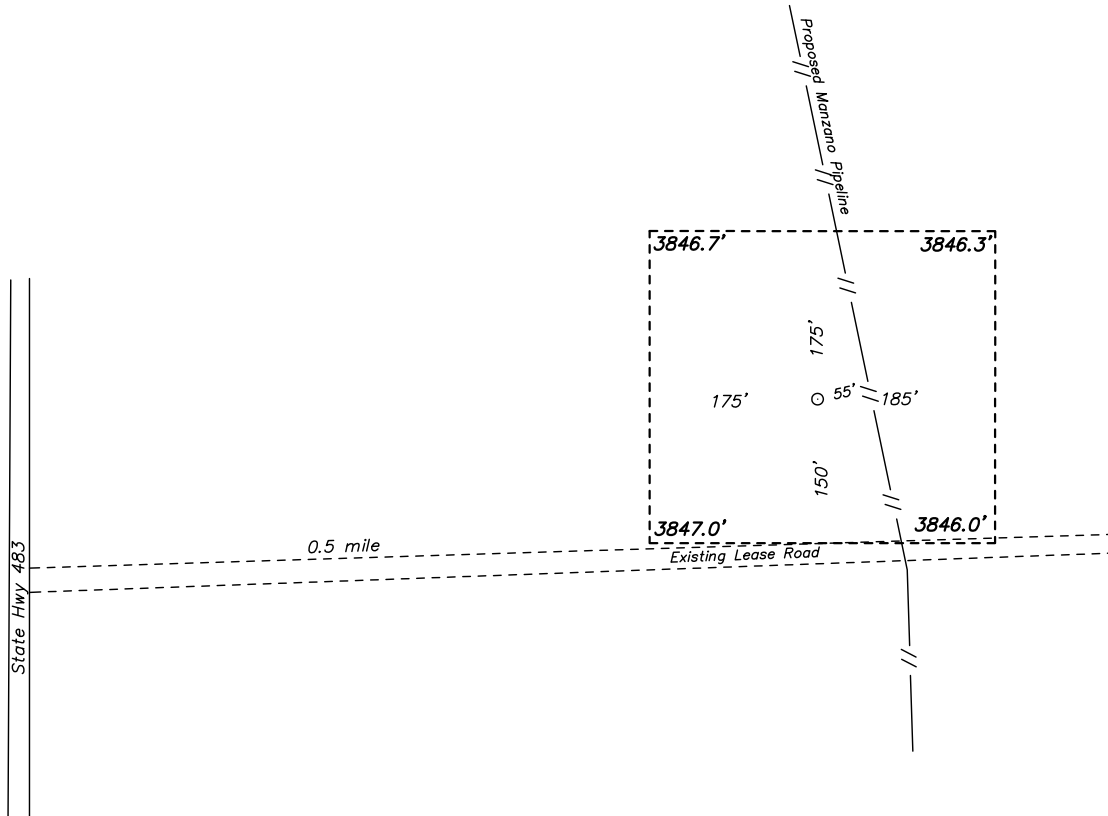
Signature & Seal of Professional Surveyor

Certificate No. Gary L. Jones 7977

Basin Surveyors

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

**SECTION 15, TOWNSHIP 17 SOUTH, RANGE 36 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.**

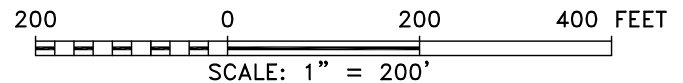


MANZANO, LLC
VINDICATOR CANYON STATE UNIT 22 27 #2H
ELEV. - 3846'

Lat - N 32.829704°
 Long - W 103.341253°
 NMSPCE- N 667009.7
 E 846075.2
 (NAD-83)



LOVINGTON, NM IS ±7 MILES TO THE NORTH OF LOCATION.



MANZANO LLC.

REF: VINDICATOR CANYON STATE UNIT 22 27 #2H / WELL PAD TOPO

THE VINDICATOR CANYON STATE UNIT 22 27 #2H LOCATED 715'

FROM THE SOUTH LINE AND 2295' FROM THE EAST LINE OF

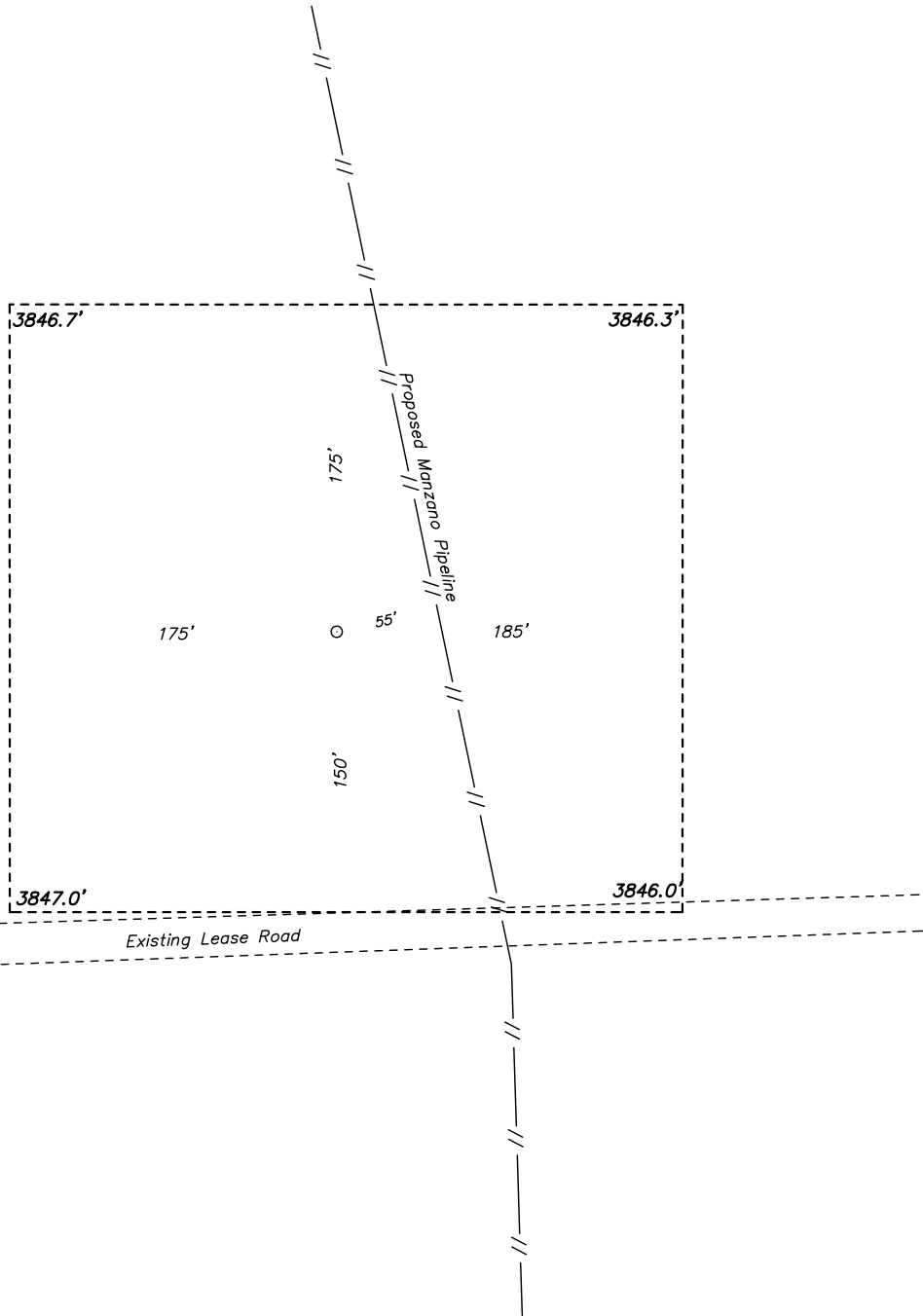
SECTION 15, TOWNSHIP 17 SOUTH, RANGE 36 EAST,

N.M.P.M., LEA COUNTY, NEW MEXICO.

basin
surveys
 focused on excellence
 in the oilfield

P.O. Box 1786 (575) 393-7316 - Office
 1120 N. West County Rd. (575) 392-2206 - Fax
 Hobbs, New Mexico 88241 basin-surveys.com

**SECTION 15, TOWNSHIP 17 SOUTH, RANGE 36 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.**



100 0 100 200 FEET
SCALE: 1" = 100'

MANZANO LLC.

REF: VINDICATOR CANYON STATE UNIT 22 27 #2H / WELL PAD TOPO

THE VINDICATOR CANYON STATE UNIT 22 27 #2H LOCATED 715'

FROM THE SOUTH LINE AND 2295' FROM THE EAST LINE OF

SECTION 15, TOWNSHIP 17 SOUTH, RANGE 36 EAST,

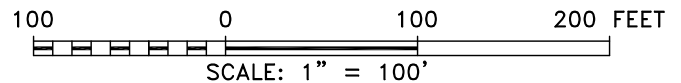
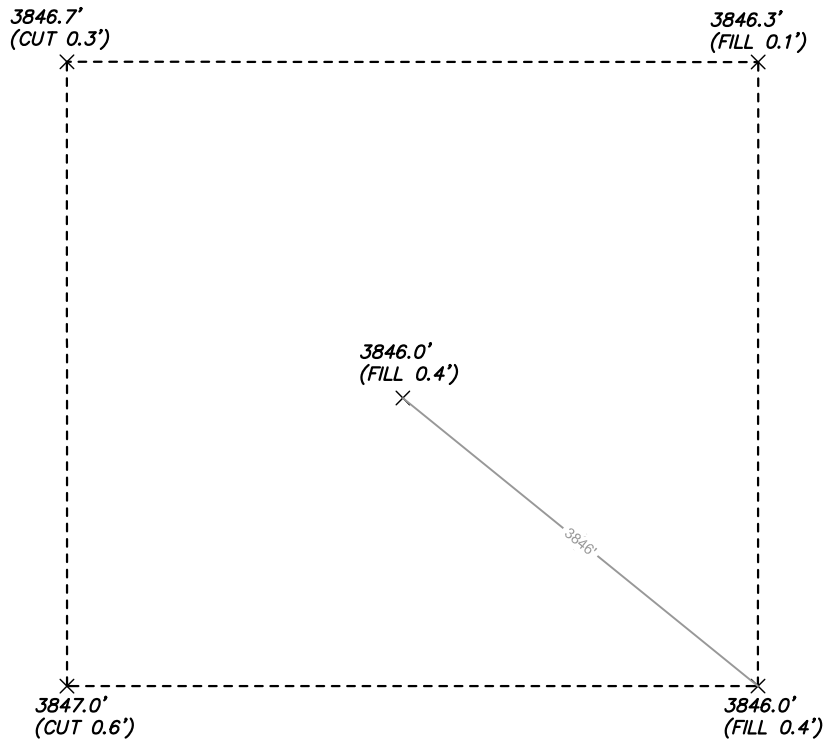
N.M.P.M., LEA COUNTY, NEW MEXICO.

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Hobbs, New Mexico 88241 basin-surveys.com

W.O. Number: 35165	Drawn By: K. GOAD	Date: 08-24-2020	Survey Date: 08-24-2020	Sheet 1 of 1 Sheets
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**SECTION 15, TOWNSHIP 17 SOUTH, RANGE 36 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.**



MANZANO LLC.

REF: VINDICATOR CANYON STATE UNIT 22 27 #2H / CUT & FILL

THE VINDICATOR CANYON STATE UNIT 22 27 #2H LOCATED 715'

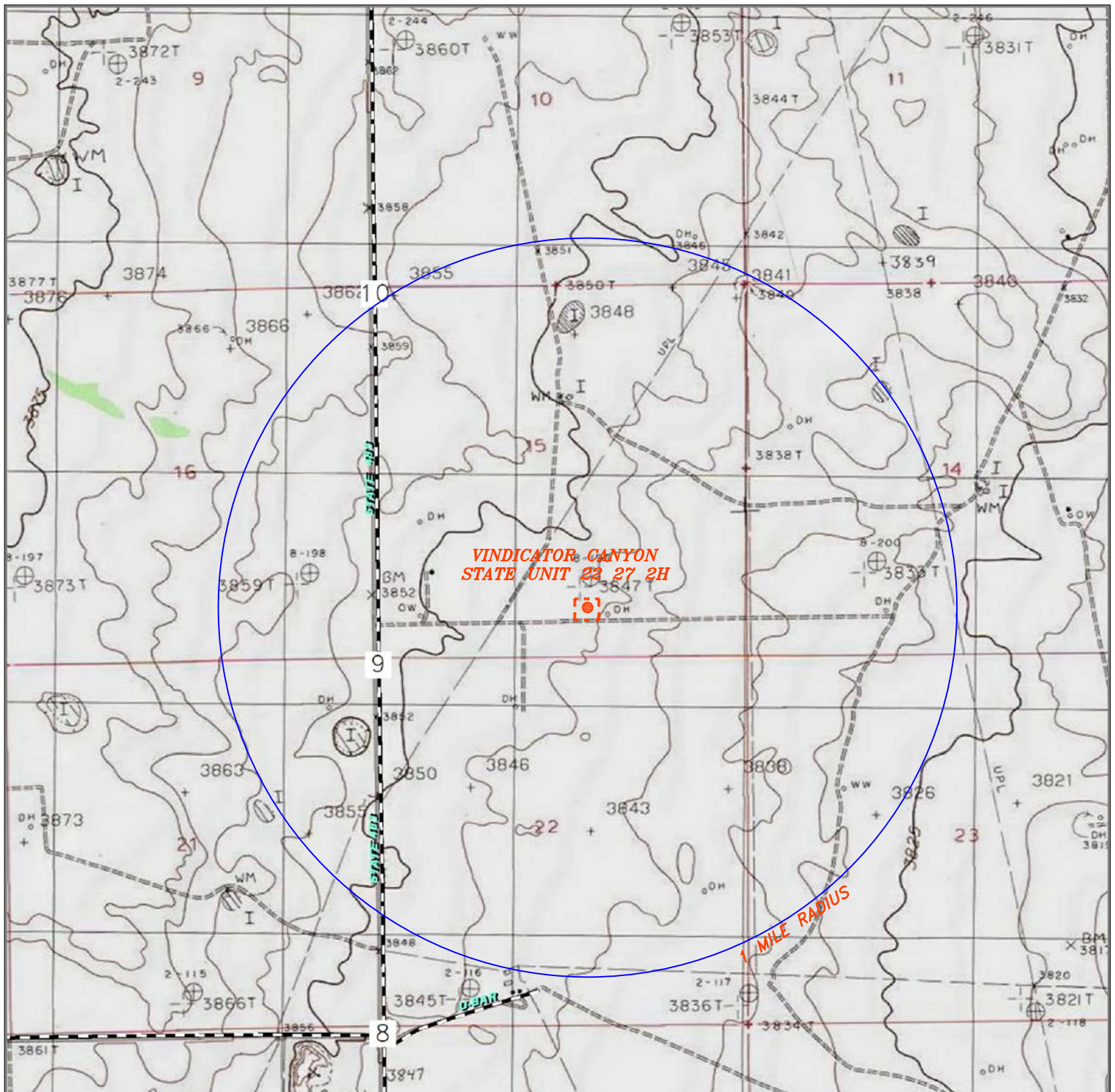
FROM THE SOUTH LINE AND 2295' FROM THE EAST LINE OF

SECTION 15, TOWNSHIP 17 SOUTH, RANGE 36 EAST,

N.M.P.M., LEA COUNTY, NEW MEXICO.

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Hobbs, New Mexico 88241 basin-surveys.com



VINDICATOR CANYON STATE UNIT 22 27 #2H

Located 715' FSL and 2295' FEL
 Section 15, Township 17 South, Range 36 East,
 N.M.P.M., Lea County, New Mexico.



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 Hobbs, New Mexico 88241
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 basinsurveys.com

0' 1000' 2000' 3000' 4000'
 SCALE: 1" = 2000'

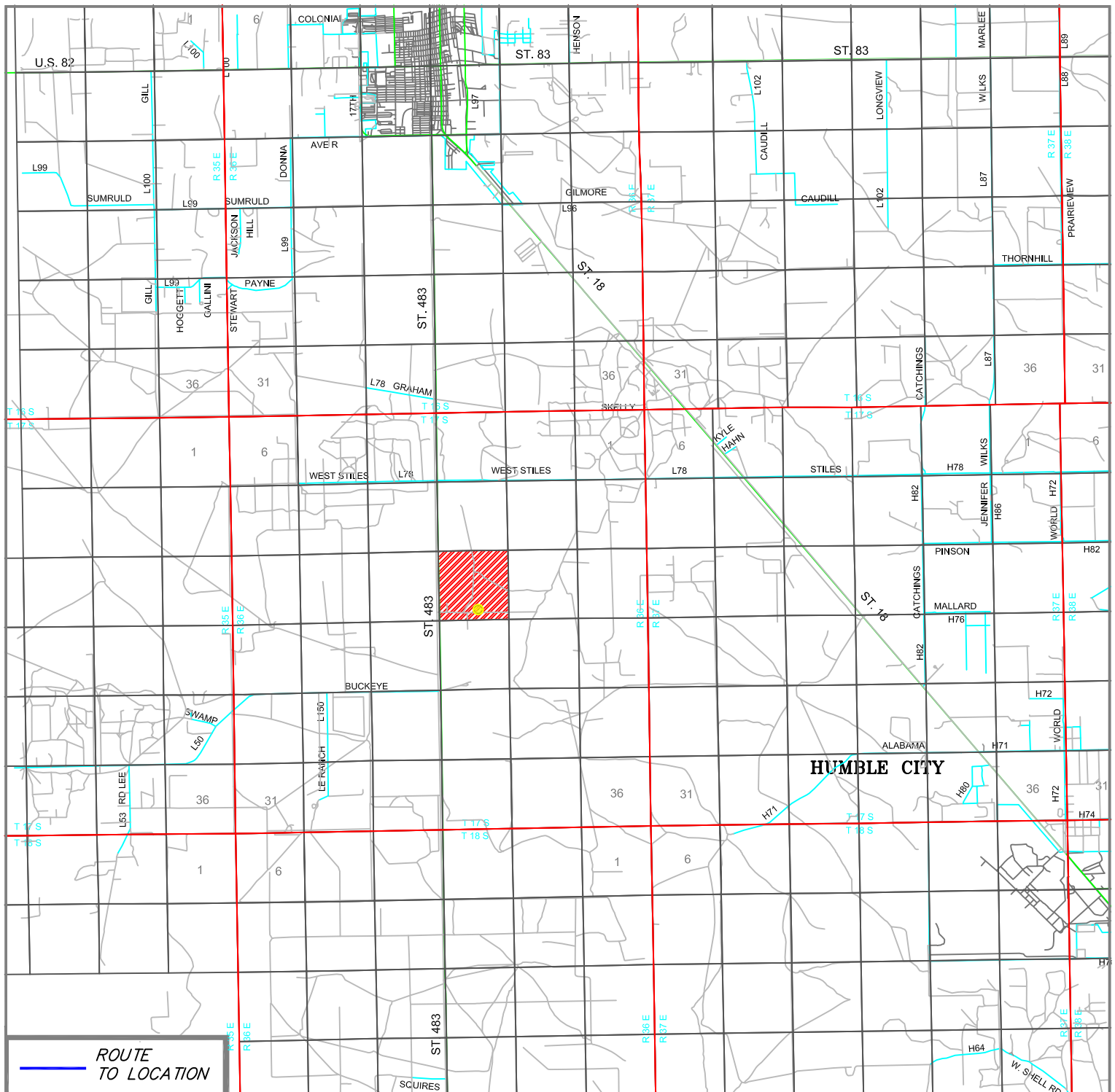
W.O. Number: KJG 35165

Survey Date: 08-24-2020

YELLOW TINT - USA LAND
 BLUE TINT - STATE LAND
 NATURAL COLOR - FEE LAND



MANZANO LLC.



VINDICATOR CANYON STATE UNIT 22 27 #2H

Located 715' FSL and 2295' FEL
 Section 15, Township 17 South, Range 36 East,
 N.M.P.M., Lea County, New Mexico.



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0 1 MI 2 MI 3 MI 4 MI

SCALE: 1" = 2 MILES

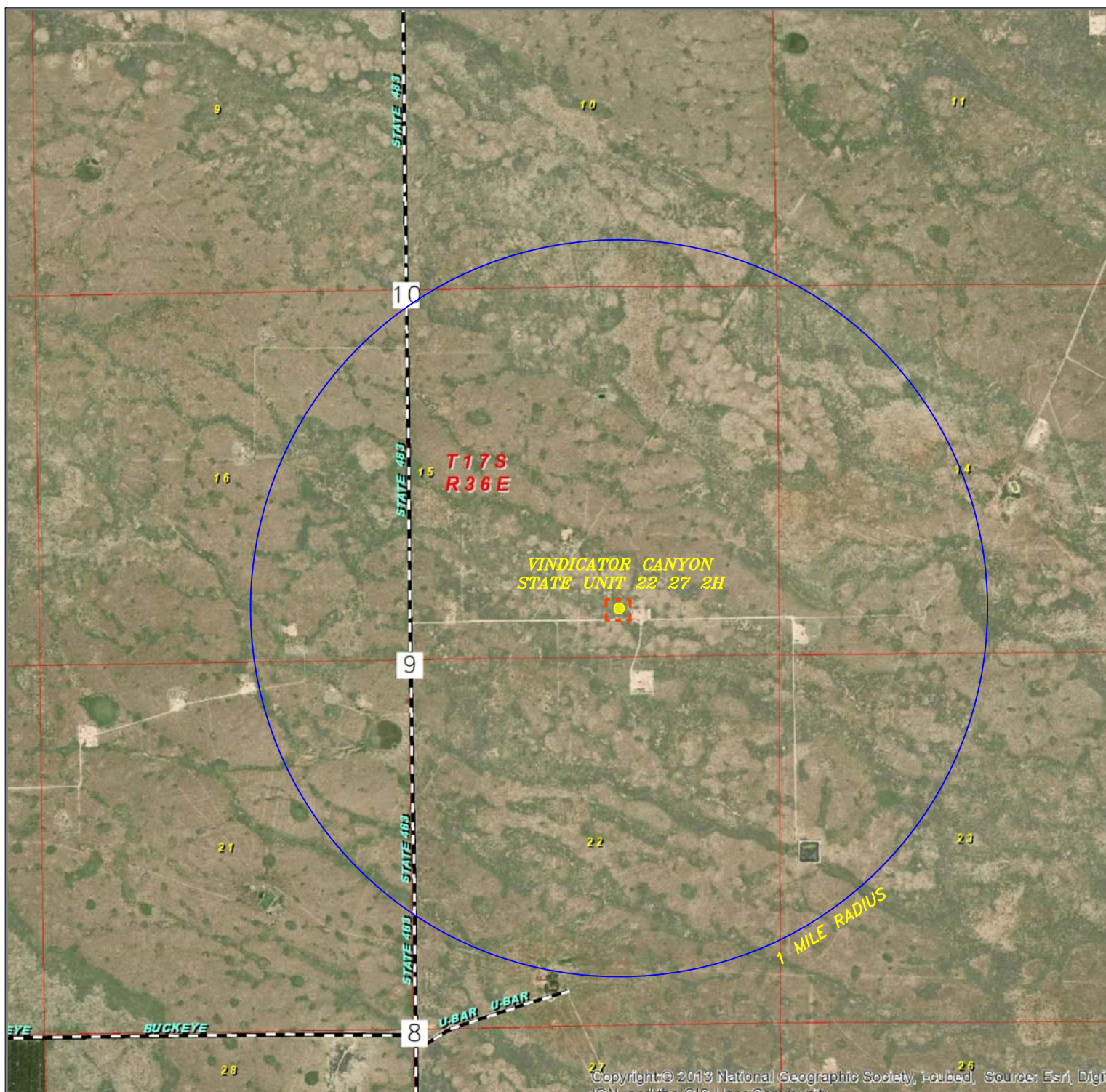
W.O. Number: KJG 35165

Survey Date: 08-24-2020

YELLOW TINT - USA LAND
 BLUE TINT - STATE LAND
 NATURAL COLOR - FEE LAND



MANZANO LLC.



VINDICATOR CANYON STATE UNIT 22 27 #2H
 Located 715' FSL and 2295' FEL
 Section 15, Township 17 South, Range 36 East,
 N.M.P.M., Lea County, New Mexico.



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 1120 N. West County Rd.
 Hobbs, New Mexico 88241
 (575) 393-7316 - Office
 (575) 392-2206 - Fax
 basinsurveys.com

0' 1000' 2000' 3000' 4000'
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W.O. Number: KJG 35165
 Survey Date: 08-24-2020
 YELLOW TINT - USA LAND
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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 #002H	30-025-48403	N-15-17S-36E	0715S 2295E	1000	None	Gas line will be in place prior to commencing drilling operations

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

Form APD Comments

Permit 285976

PERMIT COMMENTS

Operator Name and Address: MANZANO LLC [231429] P.O. Box 1737 Roswell, NM 88202		API Number: 30-025-48403
		Well: VINDICATOR CANYON 22 27 STATE UNIT #002H

Created By	Comment	Comment Date
pkautz	Hold pending hearing	8/31/2020

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

Form APD Conditions

Permit 285976

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: MANZANO LLC [231429] P.O. Box 1737 Roswell, NM 88202	API Number: 30-025-48403
	Well: VINDICATOR CANYON 22 27 STATE UNIT #002H

OCD Reviewer	Condition
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

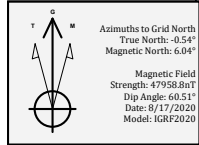
DrilTech, LLC

Lea County, NM (NAD 83)
Vindicator Canyon State Unit 22 27 #2H
Wellbore #1
Plan #3



SURFACE LOCATION

US State Plane 1983
New Mexico Eastern Zone
Elevation: GL 3846' + RBK 20' @ 3866.00ft
Northing 667009.70 Easting 846075.20 Latitude 32° 49' 46.935 N Longitude 103° 20' 28.512 W

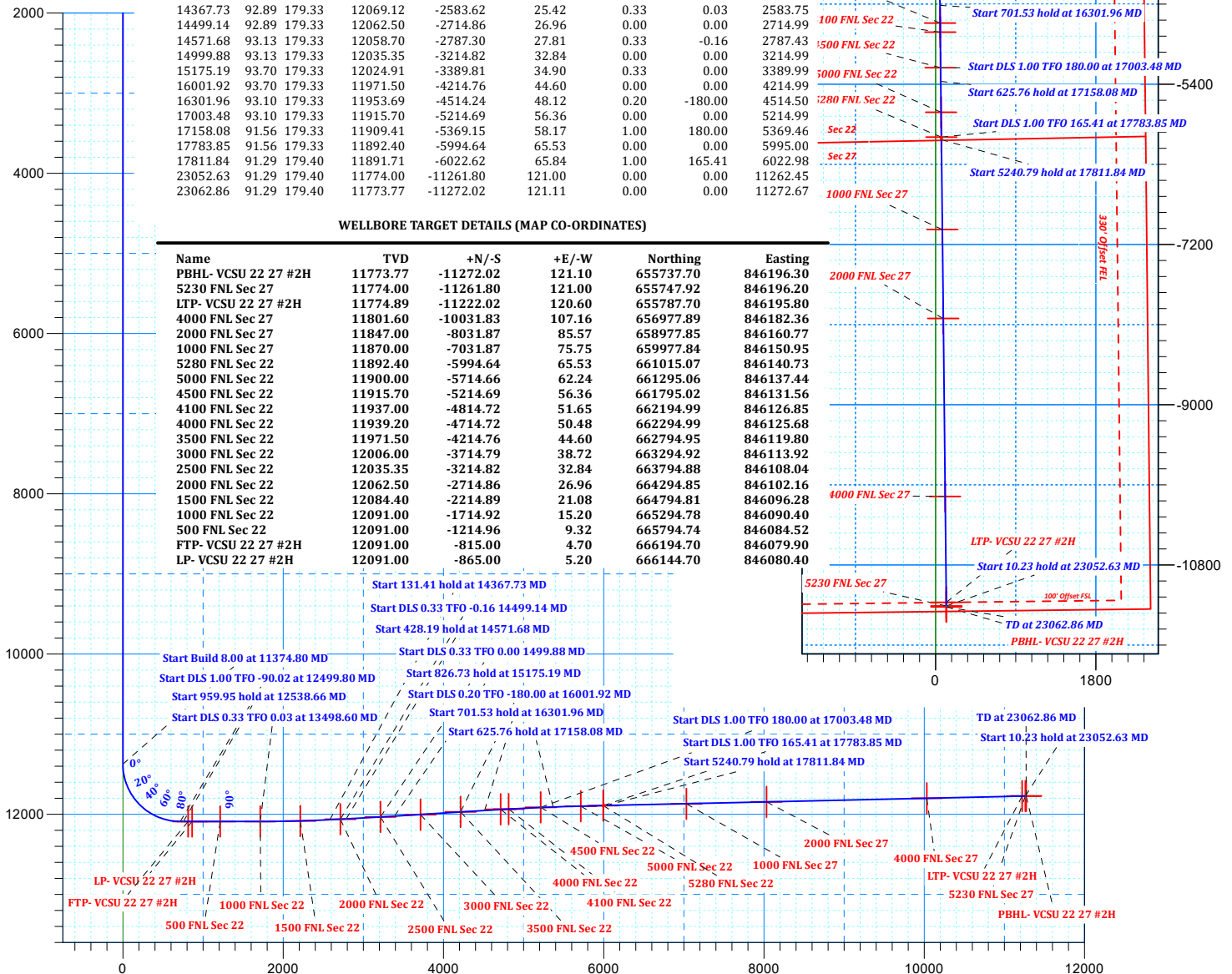


SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
0.00	0.00	0.00	11374.80	0.00	0.00	0.00	0.00	0.00
11374.80	0.00	0.00	11374.80	0.00	0.00	0.00	0.00	0.00
12499.80	90.00	179.71	12091.00	-716.19	3.57	8.00	179.71	716.18
12538.66	90.00	179.33	12091.00	-755.04	3.90	1.00	-90.02	755.04
13498.60	90.00	179.33	12091.00	-1714.92	15.20	0.00	0.00	1714.99
14367.73	92.89	179.33	12069.12	-2583.62	25.42	0.33	0.03	2583.75
14499.14	92.89	179.33	12062.50	-2714.86	26.96	0.00	0.00	2714.99
14571.68	93.13	179.33	12058.70	-2787.30	27.81	0.33	-0.16	2787.43
14999.88	93.13	179.33	12035.35	-3214.82	32.84	0.00	0.00	3214.99
15175.19	93.70	179.33	12024.91	-3389.81	34.90	0.33	0.00	3389.99
16001.92	93.70	179.33	11971.50	-4214.76	44.60	0.00	0.00	4214.99
16301.96	93.10	179.33	11953.69	-4514.24	48.12	0.20	-180.00	4514.50
17003.48	93.10	179.33	11915.70	-5214.69	56.36	0.00	0.00	5214.99
17158.08	91.56	179.33	11909.41	-5369.15	58.17	1.00	180.00	5369.46
17783.85	91.56	179.33	11892.40	-5994.64	65.53	0.00	0.00	5995.00
17811.84	91.29	179.40	11891.71	-6022.62	65.84	1.00	165.41	6022.98
23052.63	91.29	179.40	11774.00	-11261.80	121.00	0.00	0.00	11262.45
23062.86	91.29	179.40	11773.77	-11272.02	121.11	0.00	0.00	11272.67

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL- VCSU 22 27 #2H	11773.77	-11272.02	121.10	655737.70	846196.30
5230 FNL Sec 27	11774.00	-11261.80	121.00	655747.92	846196.20
LTP- VCSU 22 27 #2H	11774.89	-11222.02	120.60	655787.70	846195.80
4000 FNL Sec 27	11801.60	-10031.83	107.16	656977.89	846182.36
2000 FNL Sec 27	11847.00	-8031.87	85.57	658977.85	846160.77
1000 FNL Sec 27	11870.00	-7031.87	75.75	659977.84	846150.95
5280 FNL Sec 22	11892.40	-5994.64	65.53	661015.07	846140.73
5000 FNL Sec 22	11900.00	-5714.66	62.24	661295.06	846137.44
4500 FNL Sec 22	11915.70	-5214.69	56.36	661795.02	846131.56
4100 FNL Sec 22	11937.00	-4814.72	51.65	662194.99	846126.85
4000 FNL Sec 22	11939.20	-4714.72	50.48	662294.99	846125.68
3500 FNL Sec 22	11971.50	-4214.76	44.60	662794.95	846119.80
3000 FNL Sec 22	12006.00	-3714.79	38.72	663294.92	846113.92
2500 FNL Sec 22	12035.35	-3214.82	32.84	663794.88	846108.04
2000 FNL Sec 22	12062.50	-2714.86	26.96	664294.85	846102.16
1500 FNL Sec 22	12084.40	-2214.89	21.08	664794.81	846096.28
1000 FNL Sec 22	12091.00	-1714.92	15.20	665294.78	846090.40
500 FNL Sec 22	12091.00	-1214.96	9.32	665794.74	846084.52
FTP- VCSU 22 27 #2H	12091.00	-815.00	4.70	666194.70	846079.90
LP- VCSU 22 27 #2H	12091.00	-865.00	5.20	666144.70	846080.40



Vertical Section at 179.37° (2000 ft/in)

Manzano, LLC

Lea County, NM (NAD 83)

Vindicator Canyon State Unit 22 27 #2H

Vindicator Canyon State Unit 22 27 #2H

Wellbore #1

Plan: Plan #3

Standard Planning Report

27 August, 2020

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

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 #2H			
Site Position:		Northing:	667,009.70 usft	Latitude:	32° 49' 46.935 N
From:	Map	Easting:	846,075.20 usft	Longitude:	103° 20' 28.512 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in		

Well	Vindicator Canyon State Unit 22 27 #2H					
Well Position	+N/-S	0.00 ft	Northing:	667,009.70 usft	Latitude:	32° 49' 46.935 N
	+E/-W	0.00 ft	Easting:	846,075.20 usft	Longitude:	103° 20' 28.512 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	8/17/2020	6.58	60.51	47,958.83449851

Design	Plan #3				
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	179.37	

Plan Survey Tool Program	Date	8/27/2020			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	23,062.86 Plan #3 (Wellbore #1)	MWD		
			MWD - Standard		

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Wellbore:	Wellbore #1		
Design:	Plan #3		

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	
11,374.80	0.00	0.00	11,374.80	0.00	0.00	0.00	0.00	0.00	0.00	
12,499.80	90.00	179.71	12,091.00	-716.19	3.57	8.00	8.00	0.00	179.71	
12,538.66	90.00	179.33	12,091.00	-755.04	3.90	1.00	0.00	-1.00	-90.02	
13,498.60	90.00	179.33	12,091.00	-1,714.92	15.20	0.00	0.00	0.00	0.00	1000 FNL Sec 22
14,367.73	92.89	179.33	12,069.12	-2,583.62	25.42	0.33	0.33	0.00	0.03	
14,499.14	92.89	179.33	12,062.50	-2,714.86	26.96	0.00	0.00	0.00	0.00	2000 FNL Sec 22
14,571.68	93.13	179.33	12,058.70	-2,787.30	27.81	0.33	0.33	0.00	-0.16	
14,999.88	93.13	179.33	12,035.35	-3,214.82	32.84	0.00	0.00	0.00	0.00	2500 FNL Sec 22
15,175.19	93.70	179.33	12,024.91	-3,389.81	34.90	0.33	0.33	0.00	0.00	
16,001.92	93.70	179.33	11,971.50	-4,214.76	44.60	0.00	0.00	0.00	0.00	3500 FNL Sec 22
16,301.96	93.10	179.33	11,953.69	-4,514.24	48.12	0.20	-0.20	0.00	-180.00	
17,003.48	93.10	179.33	11,915.70	-5,214.69	56.36	0.00	0.00	0.00	0.00	4500 FNL Sec 22
17,158.08	91.56	179.33	11,909.41	-5,369.15	58.17	1.00	-1.00	0.00	180.00	
17,783.85	91.56	179.33	11,892.40	-5,994.64	65.53	0.00	0.00	0.00	0.00	5280 FNL Sec 22
17,811.84	91.29	179.40	11,891.71	-6,022.62	65.84	1.00	-0.97	0.25	165.41	
23,052.63	91.29	179.40	11,774.00	-11,261.80	121.00	0.00	0.00	0.00	0.00	5230 FNL Sec 27
23,062.86	91.29	179.40	11,773.77	-11,272.02	121.11	0.00	0.00	0.00	0.00	PBHL- VCSU 22 27 #

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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)
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

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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)	
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	

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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
11,374.80	0.00	0.00	11,374.80	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 8.00 at 11374.80 MD									
11,400.00	2.02	179.71	11,400.00	-0.44	0.00	0.44	8.00	8.00	0.00
11,500.00	10.02	179.71	11,499.36	-10.92	0.05	10.92	8.00	8.00	0.00
11,600.00	18.02	179.71	11,596.31	-35.11	0.18	35.11	8.00	8.00	0.00
11,700.00	26.02	179.71	11,688.94	-72.57	0.36	72.57	8.00	8.00	0.00
11,800.00	34.02	179.71	11,775.46	-122.55	0.61	122.55	8.00	8.00	0.00
11,900.00	42.02	179.71	11,854.18	-184.09	0.92	184.09	8.00	8.00	0.00
12,000.00	50.02	179.71	11,923.57	-255.98	1.28	255.98	8.00	8.00	0.00
12,100.00	58.02	179.71	11,982.28	-336.84	1.68	336.83	8.00	8.00	0.00
12,200.00	66.02	179.71	12,029.16	-425.07	2.12	425.07	8.00	8.00	0.00
12,300.00	74.02	179.71	12,063.31	-518.97	2.59	518.97	8.00	8.00	0.00
12,400.00	82.02	179.71	12,084.06	-616.71	3.08	616.71	8.00	8.00	0.00
12,499.80	90.00	179.71	12,091.00	-716.19	3.57	716.18	8.00	8.00	0.00
Start DLS 1.00 TFO -90.02 at 12499.80 MD									
12,500.00	90.00	179.71	12,091.00	-716.39	3.58	716.38	0.00	0.00	0.00
12,538.66	90.00	179.33	12,091.00	-755.04	3.90	755.04	1.01	0.00	-1.01
Start 959.95 hold at 12538.66 MD									
12,600.00	90.00	179.33	12,091.00	-816.38	4.62	816.38	0.00	0.00	0.00
12,700.00	90.00	179.33	12,091.00	-916.38	5.80	916.38	0.00	0.00	0.00
12,800.00	90.00	179.33	12,091.00	-1,016.37	6.98	1,016.38	0.00	0.00	0.00
12,900.00	90.00	179.33	12,091.00	-1,116.36	8.15	1,116.38	0.00	0.00	0.00
13,000.00	90.00	179.33	12,091.00	-1,216.35	9.33	1,216.38	0.00	0.00	0.00
13,100.00	90.00	179.33	12,091.00	-1,316.35	10.51	1,316.38	0.00	0.00	0.00
13,200.00	90.00	179.33	12,091.00	-1,416.34	11.69	1,416.38	0.00	0.00	0.00
13,300.00	90.00	179.33	12,091.00	-1,516.33	12.86	1,516.38	0.00	0.00	0.00
13,400.00	90.00	179.33	12,091.00	-1,616.33	14.04	1,616.38	0.00	0.00	0.00
13,498.60	90.00	179.33	12,091.00	-1,714.92	15.20	1,714.99	0.00	0.00	0.00
Start DLS 0.33 TFO 0.03 at 13498.60 MD									
13,500.00	90.00	179.33	12,091.00	-1,716.32	15.22	1,716.38	0.33	0.33	0.00
13,600.00	90.34	179.33	12,090.70	-1,816.31	16.40	1,816.38	0.33	0.33	0.00
13,700.00	90.67	179.33	12,089.83	-1,916.30	17.57	1,916.38	0.33	0.33	0.00
13,800.00	91.00	179.33	12,088.37	-2,016.28	18.75	2,016.37	0.33	0.33	0.00
13,900.00	91.33	179.33	12,086.33	-2,116.26	19.92	2,116.35	0.33	0.33	0.00
14,000.00	91.66	179.33	12,083.72	-2,216.22	21.10	2,216.31	0.33	0.33	0.00
14,100.00	92.00	179.33	12,080.52	-2,316.16	22.28	2,316.26	0.33	0.33	0.00
14,200.00	92.33	179.33	12,076.75	-2,416.08	23.45	2,416.19	0.33	0.33	0.00
14,300.00	92.66	179.33	12,072.39	-2,515.98	24.62	2,516.10	0.33	0.33	0.00
14,367.73	92.89	179.33	12,069.12	-2,583.62	25.42	2,583.75	0.33	0.33	0.00
Start 131.41 hold at 14367.73 MD									
14,400.00	92.89	179.33	12,067.49	-2,615.85	25.80	2,615.98	0.00	0.00	0.00
14,499.14	92.89	179.33	12,062.50	-2,714.86	26.96	2,714.99	0.00	0.00	0.00
Start DLS 0.33 TFO -0.16 14499.14 MD									
14,500.00	92.89	179.33	12,062.46	-2,715.72	26.97	2,715.85	0.00	0.00	0.00
14,571.68	93.13	179.33	12,058.70	-2,787.30	27.81	2,787.43	0.33	0.33	0.00
Start 428.19 hold at 14571.68 MD									
14,600.00	93.13	179.33	12,057.15	-2,815.57	28.14	2,815.71	0.00	0.00	0.00

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

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)
14,700.00	93.13	179.33	12,051.70	-2,915.41	29.32	2,915.56	0.00	0.00	0.00
14,800.00	93.13	179.33	12,046.25	-3,015.26	30.49	3,015.41	0.00	0.00	0.00
14,900.00	93.13	179.33	12,040.80	-3,115.10	31.67	3,115.26	0.00	0.00	0.00
14,999.88	93.13	179.33	12,035.35	-3,214.82	32.84	3,214.99	0.00	0.00	0.00
Start DLS 0.33 TFO 0.00 1499.88 MD									
15,000.00	93.13	179.33	12,035.34	-3,214.95	32.84	3,215.11	0.00	0.00	0.00
15,100.00	93.46	179.33	12,029.60	-3,314.77	34.02	3,314.95	0.33	0.33	0.00
15,175.19	93.70	179.33	12,024.91	-3,389.81	34.90	3,389.99	0.33	0.33	0.00
Start 826.73 hold at 15175.19 MD									
15,200.00	93.70	179.33	12,023.31	-3,414.57	35.19	3,414.75	0.00	0.00	0.00
15,300.00	93.70	179.33	12,016.85	-3,514.35	36.36	3,514.54	0.00	0.00	0.00
15,400.00	93.70	179.33	12,010.39	-3,614.14	37.54	3,614.33	0.00	0.00	0.00
15,500.00	93.70	179.33	12,003.93	-3,713.92	38.71	3,714.12	0.00	0.00	0.00
15,600.00	93.70	179.33	11,997.46	-3,813.71	39.88	3,813.91	0.00	0.00	0.00
15,700.00	93.70	179.33	11,991.00	-3,913.49	41.06	3,913.70	0.00	0.00	0.00
15,800.00	93.70	179.33	11,984.54	-4,013.27	42.23	4,013.50	0.00	0.00	0.00
15,900.00	93.70	179.33	11,978.08	-4,113.06	43.40	4,113.29	0.00	0.00	0.00
16,000.00	93.70	179.33	11,971.62	-4,212.84	44.58	4,213.08	0.00	0.00	0.00
16,001.92	93.70	179.33	11,971.50	-4,214.76	44.60	4,214.99	0.00	0.00	0.00
Start DLS 0.20 TFO -180.00 at 16001.92 MD									
16,100.00	93.51	179.33	11,965.33	-4,312.64	45.75	4,312.88	0.20	-0.20	0.00
16,200.00	93.31	179.33	11,959.39	-4,412.45	46.92	4,412.70	0.20	-0.20	0.00
16,300.00	93.11	179.33	11,953.79	-4,512.29	48.10	4,512.55	0.20	-0.20	0.00
16,301.96	93.10	179.33	11,953.69	-4,514.24	48.12	4,514.50	0.20	-0.20	0.00
Start 701.53 hold at 16301.96 MD									
16,400.00	93.10	179.33	11,948.38	-4,612.14	49.27	4,612.40	0.00	0.00	0.00
16,500.00	93.10	179.33	11,942.96	-4,711.98	50.45	4,712.25	0.00	0.00	0.00
16,600.00	93.10	179.33	11,937.55	-4,811.83	51.62	4,812.11	0.00	0.00	0.00
16,700.00	93.10	179.33	11,932.13	-4,911.67	52.79	4,911.96	0.00	0.00	0.00
16,800.00	93.10	179.33	11,926.72	-5,011.52	53.97	5,011.81	0.00	0.00	0.00
16,900.00	93.10	179.33	11,921.30	-5,111.37	55.14	5,111.67	0.00	0.00	0.00
17,000.00	93.10	179.33	11,915.89	-5,211.21	56.32	5,211.52	0.00	0.00	0.00
17,003.48	93.10	179.33	11,915.70	-5,214.69	56.36	5,214.99	0.00	0.00	0.00
Start DLS 1.00 TFO 180.00 at 17003.48 MD									
17,100.00	92.14	179.33	11,911.29	-5,311.10	57.49	5,311.41	1.00	-1.00	0.00
17,158.08	91.56	179.33	11,909.41	-5,369.15	58.17	5,369.46	1.00	-1.00	0.00
Start 625.76 hold at 17158.08 MD									
17,200.00	91.56	179.33	11,908.27	-5,411.05	58.67	5,411.37	0.00	0.00	0.00
17,300.00	91.56	179.33	11,905.55	-5,511.00	59.84	5,511.33	0.00	0.00	0.00
17,400.00	91.56	179.33	11,902.84	-5,610.96	61.02	5,611.29	0.00	0.00	0.00
17,500.00	91.56	179.33	11,900.12	-5,710.92	62.19	5,711.25	0.00	0.00	0.00
17,600.00	91.56	179.33	11,897.40	-5,810.87	63.37	5,811.22	0.00	0.00	0.00
17,700.00	91.56	179.33	11,894.68	-5,910.83	64.54	5,911.18	0.00	0.00	0.00
17,783.85	91.56	179.33	11,892.40	-5,994.64	65.53	5,995.00	0.00	0.00	0.00
Start DLS 1.00 TFO 165.41 at 17783.85 MD									
17,800.00	91.40	179.37	11,891.98	-6,010.78	65.71	6,011.14	1.00	-0.97	0.25
17,811.84	91.29	179.40	11,891.71	-6,022.62	65.84	6,022.98	1.00	-0.97	0.25
Start 5240.79 hold at 17811.84 MD									
17,900.00	91.29	179.40	11,889.73	-6,110.75	66.77	6,111.12	0.00	0.00	0.00
18,000.00	91.29	179.40	11,887.48	-6,210.72	67.82	6,211.09	0.00	0.00	0.00
18,100.00	91.29	179.40	11,885.23	-6,310.69	68.87	6,311.07	0.00	0.00	0.00
18,200.00	91.29	179.40	11,882.99	-6,410.66	69.93	6,411.04	0.00	0.00	0.00
18,300.00	91.29	179.40	11,880.74	-6,510.63	70.98	6,511.02	0.00	0.00	0.00

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

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)
18,400.00	91.29	179.40	11,878.50	-6,610.60	72.03	6,610.99	0.00	0.00	0.00
18,500.00	91.29	179.40	11,876.25	-6,710.57	73.08	6,710.97	0.00	0.00	0.00
18,600.00	91.29	179.40	11,874.00	-6,810.54	74.14	6,810.94	0.00	0.00	0.00
18,700.00	91.29	179.40	11,871.76	-6,910.51	75.19	6,910.92	0.00	0.00	0.00
18,800.00	91.29	179.40	11,869.51	-7,010.48	76.24	7,010.89	0.00	0.00	0.00
18,900.00	91.29	179.40	11,867.27	-7,110.45	77.29	7,110.87	0.00	0.00	0.00
19,000.00	91.29	179.40	11,865.02	-7,210.42	78.35	7,210.84	0.00	0.00	0.00
19,100.00	91.29	179.40	11,862.77	-7,310.38	79.40	7,310.82	0.00	0.00	0.00
19,200.00	91.29	179.40	11,860.53	-7,410.35	80.45	7,410.79	0.00	0.00	0.00
19,300.00	91.29	179.40	11,858.28	-7,510.32	81.50	7,510.76	0.00	0.00	0.00
19,400.00	91.29	179.40	11,856.04	-7,610.29	82.56	7,610.74	0.00	0.00	0.00
19,500.00	91.29	179.40	11,853.79	-7,710.26	83.61	7,710.71	0.00	0.00	0.00
19,600.00	91.29	179.40	11,851.54	-7,810.23	84.66	7,810.69	0.00	0.00	0.00
19,700.00	91.29	179.40	11,849.30	-7,910.20	85.71	7,910.66	0.00	0.00	0.00
19,800.00	91.29	179.40	11,847.05	-8,010.17	86.77	8,010.64	0.00	0.00	0.00
19,900.00	91.29	179.40	11,844.81	-8,110.14	87.82	8,110.61	0.00	0.00	0.00
20,000.00	91.29	179.40	11,842.56	-8,210.11	88.87	8,210.59	0.00	0.00	0.00
20,100.00	91.29	179.40	11,840.31	-8,310.08	89.92	8,310.56	0.00	0.00	0.00
20,200.00	91.29	179.40	11,838.07	-8,410.05	90.98	8,410.54	0.00	0.00	0.00
20,300.00	91.29	179.40	11,835.82	-8,510.02	92.03	8,510.51	0.00	0.00	0.00
20,400.00	91.29	179.40	11,833.58	-8,609.98	93.08	8,610.49	0.00	0.00	0.00
20,500.00	91.29	179.40	11,831.33	-8,709.95	94.13	8,710.46	0.00	0.00	0.00
20,600.00	91.29	179.40	11,829.08	-8,809.92	95.18	8,810.44	0.00	0.00	0.00
20,700.00	91.29	179.40	11,826.84	-8,909.89	96.24	8,910.41	0.00	0.00	0.00
20,800.00	91.29	179.40	11,824.59	-9,009.86	97.29	9,010.39	0.00	0.00	0.00
20,900.00	91.29	179.40	11,822.35	-9,109.83	98.34	9,110.36	0.00	0.00	0.00
21,000.00	91.29	179.40	11,820.10	-9,209.80	99.39	9,210.34	0.00	0.00	0.00
21,100.00	91.29	179.40	11,817.86	-9,309.77	100.45	9,310.31	0.00	0.00	0.00
21,200.00	91.29	179.40	11,815.61	-9,409.74	101.50	9,410.29	0.00	0.00	0.00
21,300.00	91.29	179.40	11,813.36	-9,509.71	102.55	9,510.26	0.00	0.00	0.00
21,400.00	91.29	179.40	11,811.12	-9,609.68	103.60	9,610.24	0.00	0.00	0.00
21,500.00	91.29	179.40	11,808.87	-9,709.65	104.66	9,710.21	0.00	0.00	0.00
21,600.00	91.29	179.40	11,806.63	-9,809.62	105.71	9,810.18	0.00	0.00	0.00
21,700.00	91.29	179.40	11,804.38	-9,909.58	106.76	9,910.16	0.00	0.00	0.00
21,800.00	91.29	179.40	11,802.13	-10,009.55	107.81	10,010.13	0.00	0.00	0.00
21,900.00	91.29	179.40	11,799.89	-10,109.52	108.87	10,110.11	0.00	0.00	0.00
22,000.00	91.29	179.40	11,797.64	-10,209.49	109.92	10,210.08	0.00	0.00	0.00
22,100.00	91.29	179.40	11,795.40	-10,309.46	110.97	10,310.06	0.00	0.00	0.00
22,200.00	91.29	179.40	11,793.15	-10,409.43	112.02	10,410.03	0.00	0.00	0.00
22,300.00	91.29	179.40	11,790.90	-10,509.40	113.08	10,510.01	0.00	0.00	0.00
22,400.00	91.29	179.40	11,788.66	-10,609.37	114.13	10,609.98	0.00	0.00	0.00
22,500.00	91.29	179.40	11,786.41	-10,709.34	115.18	10,709.96	0.00	0.00	0.00
22,600.00	91.29	179.40	11,784.17	-10,809.31	116.23	10,809.93	0.00	0.00	0.00
22,700.00	91.29	179.40	11,781.92	-10,909.28	117.29	10,909.91	0.00	0.00	0.00
22,800.00	91.29	179.40	11,779.67	-11,009.25	118.34	11,009.88	0.00	0.00	0.00
22,900.00	91.29	179.40	11,777.43	-11,109.22	119.39	11,109.86	0.00	0.00	0.00
23,000.00	91.29	179.40	11,775.18	-11,209.18	120.44	11,209.83	0.00	0.00	0.00
23,052.63	91.29	179.40	11,774.00	-11,261.80	121.00	11,262.45	0.00	0.00	0.00
Start 10.23 hold at 23052.63 MD									
23,062.86	91.29	179.40	11,773.77	-11,272.02	121.11	11,272.67	0.00	0.00	0.00
TD at 23062.86 MD									

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

Design Targets										
Target Name										
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)			
PBHL- VCSU 22 27 #2H	0.00	0.00	11,773.77	-11,272.02	121.10	655,737.70	846,196.30	32° 47' 55.403 N	103° 20' 28.333 W	
- plan misses target center by 0.01ft at 23062.86ft MD (11773.77 TVD, -11272.02 N, 121.11 E)										
- Point										
5230 FNL Sec 27	0.00	0.00	11,774.00	-11,261.80	121.00	655,747.93	846,196.20	32° 47' 55.504 N	103° 20' 28.333 W	
- plan hits target center										
- Point										
LTP- VCSU 22 27 #2H	0.00	0.00	11,774.89	-11,222.02	120.60	655,787.70	846,195.80	32° 47' 55.898 N	103° 20' 28.333 W	
- plan misses target center by 0.02ft at 23012.84ft MD (11774.89 TVD, -11222.02 N, 120.58 E)										
- Point										
4000 FNL Sec 27	0.00	0.00	11,801.60	-10,031.83	107.16	656,977.89	846,182.36	32° 48' 7.674 N	103° 20' 28.360 W	
- plan misses target center by 0.89ft at 21822.28ft MD (11801.63 TVD, -10031.82 N, 108.05 E)										
- Point										
2000 FNL Sec 27	0.00	0.00	11,847.00	-8,031.87	85.57	658,977.85	846,160.77	32° 48' 27.463 N	103° 20' 28.393 W	
- plan misses target center by 1.49ft at 19821.68ft MD (11846.57 TVD, -8031.84 N, 86.99 E)										
- Point										
1000 FNL Sec 27	0.00	0.00	11,870.00	-7,031.87	75.75	659,977.85	846,150.95	32° 48' 37.358 N	103° 20' 28.398 W	
- plan misses target center by 1.20ft at 18821.37ft MD (11869.03 TVD, -7031.84 N, 76.47 E)										
- Point										
5280 FNL Sec 22	0.00	0.00	11,892.40	-5,994.64	65.53	661,015.08	846,140.73	32° 48' 47.620 N	103° 20' 28.404 W	
- plan hits target center										
- Point										
5000 FNL Sec 22	0.00	0.00	11,900.00	-5,714.66	62.24	661,295.06	846,137.44	32° 48' 50.391 N	103° 20' 28.412 W	
- plan misses target center by 0.02ft at 17503.74ft MD (11900.02 TVD, -5714.66 N, 62.24 E)										
- Point										
4500 FNL Sec 22	0.00	0.00	11,915.70	-5,214.69	56.36	661,795.03	846,131.56	32° 48' 55.338 N	103° 20' 28.426 W	
- plan hits target center										
- Point										
4100 FNL Sec 22	0.00	0.00	11,937.00	-4,814.72	51.65	662,195.00	846,126.85	32° 48' 59.295 N	103° 20' 28.437 W	
- plan misses target center by 0.39ft at 16602.91ft MD (11937.39 TVD, -4814.74 N, 51.65 E)										
- Point										
4000 FNL Sec 22	0.00	0.00	11,939.20	-4,714.72	50.48	662,294.99	846,125.68	32° 49' 0.285 N	103° 20' 28.440 W	
- plan misses target center by 3.61ft at 16502.94ft MD (11942.80 TVD, -4714.92 N, 50.48 E)										
- Point										
3500 FNL Sec 22	0.00	0.01	11,971.50	-4,214.76	44.60	662,794.96	846,119.80	32° 49' 5.232 N	103° 20' 28.453 W	
- plan hits target center										
- Point										
3000 FNL Sec 22	0.00	0.00	12,006.00	-3,714.79	38.72	663,294.92	846,113.92	32° 49' 10.179 N	103° 20' 28.467 W	
- plan misses target center by 2.13ft at 15500.73ft MD (12003.88 TVD, -3714.65 N, 38.72 E)										
- Point										
2500 FNL Sec 22	0.00	0.00	12,035.35	-3,214.82	32.84	663,794.89	846,108.04	32° 49' 15.126 N	103° 20' 28.481 W	
- plan hits target center										
- Point										
2000 FNL Sec 22	0.00	0.00	12,062.50	-2,714.86	26.96	664,294.85	846,102.16	32° 49' 20.073 N	103° 20' 28.495 W	
- plan hits target center										
- Point										
1500 FNL Sec 22	0.00	0.00	12,084.40	-2,214.89	21.08	664,794.82	846,096.28	32° 49' 25.020 N	103° 20' 28.509 W	
- plan misses target center by 0.64ft at 13998.66ft MD (12083.76 TVD, -2214.87 N, 21.08 E)										
- Point										
LP- VCSU 22 27 #2H	0.00	0.00	12,091.00	-865.00	5.20	666,144.70	846,080.40	32° 49' 38.377 N	103° 20' 28.547 W	
- plan misses target center by 0.01ft at 12648.62ft MD (12091.00 TVD, -865.00 N, 5.20 E)										
- Point										

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

1000 FNL Sec 22	0.00	0.00	12,091.00	-1,714.92	15.20	665,294.78	846,090.40	32° 49' 29.967 N	103° 20' 28.523 W
- plan hits target center									
- Point									
500 FNL Sec 22	0.00	0.00	12,091.00	-1,214.96	9.32	665,794.75	846,084.52	32° 49' 34.914 N	103° 20' 28.537 W
- plan misses target center by 0.01ft at 12998.60ft MD (12091.00 TVD, -1214.96 N, 9.32 E)									
- Point									
FTP- VCSU 22 27 #2H	0.00	0.00	12,091.00	-815.00	4.70	666,194.70	846,079.90	32° 49' 38.871 N	103° 20' 28.547 W
- plan misses target center by 0.09ft at 12598.62ft MD (12091.00 TVD, -815.00 N, 4.61 E)									
- Point									

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			Comment
		+N/-S (ft)	+E/-W (ft)		
11,374.80	11,374.80	0.00	0.00		Start Build 8.00 at 11374.80 MD
12,499.80	12,091.00	-716.19	3.57		Start DLS 1.00 TFO -90.02 at 12499.80 MD
12,538.66	12,091.00	-755.04	3.90		Start 959.95 hold at 12538.66 MD
13,498.60	12,091.00	-1,714.92	15.20		Start DLS 0.33 TFO 0.03 at 13498.60 MD
14,367.73	12,069.12	-2,583.62	25.42		Start 131.41 hold at 14367.73 MD
14,499.14	12,062.50	-2,714.86	26.96		Start DLS 0.33 TFO -0.16 14499.14 MD
14,571.68	12,058.70	-2,787.30	27.81		Start 428.19 hold at 14571.68 MD
14,999.88	12,035.35	-3,214.82	32.84		Start DLS 0.33 TFO 0.00 1499.88 MD
15,175.19	12,024.91	-3,389.81	34.90		Start 826.73 hold at 15175.19 MD
16,001.92	11,971.50	-4,214.76	44.60		Start DLS 0.20 TFO -180.00 at 16001.92 MD
16,301.96	11,953.69	-4,514.24	48.12		Start 701.53 hold at 16301.96 MD
17,003.48	11,915.70	-5,214.69	56.36		Start DLS 1.00 TFO 180.00 at 17003.48 MD
17,158.08	11,909.41	-5,369.15	58.17		Start 625.76 hold at 17158.08 MD
17,783.85	11,892.40	-5,994.64	65.53		Start DLS 1.00 TFO 165.41 at 17783.85 MD
17,811.84	11,891.71	-6,022.62	65.84		Start 5240.79 hold at 17811.84 MD
23,052.63	11,774.00	-11,261.80	121.00		Start 10.23 hold at 23052.63 MD
23,062.86	11,773.77	-11,272.02	121.11		TD at 23062.86 MD

Manzano, LLC

Lea County, NM (NAD 83)

Vindicator Canyon State Unit 22 27 #2H

Vindicator Canyon State Unit 22 27 #2H

Wellbore #1

Plan: Plan #3

Standard Planning Report - Geographic

27 August, 2020

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

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 #2H			
Site Position:		Northing:	667,009.70 usft	Latitude:	32° 49' 46.935 N
From:	Map	Easting:	846,075.20 usft	Longitude:	103° 20' 28.512 W
Position Uncertainty:		0.00 ft	Slot Radius:	13.200 in	

Well	Vindicator Canyon State Unit 22 27 #2H					
Well Position	+N/-S	0.00 ft	Northing:	667,009.70 usft	Latitude:	32° 49' 46.935 N
	+E/-W	0.00 ft	Easting:	846,075.20 usft	Longitude:	103° 20' 28.512 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	8/17/2020	6.58	60.51	47,958.83449851

Design	Plan #3			
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	179.37

Plan Survey Tool Program	Date	8/27/2020		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	23,062.86 Plan #3 (Wellbore #1)	MWD	
			MWD - Standard	

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

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	
11,374.80	0.00	0.00	11,374.80	0.00	0.00	0.00	0.00	0.00	0.00	
12,499.80	90.00	179.71	12,091.00	-716.19	3.57	8.00	8.00	0.00	179.71	
12,538.66	90.00	179.33	12,091.00	-755.04	3.90	1.00	0.00	-1.00	-90.02	
13,498.60	90.00	179.33	12,091.00	-1,714.92	15.20	0.00	0.00	0.00	0.00	1000 FNL Sec 22
14,367.73	92.89	179.33	12,069.12	-2,583.62	25.42	0.33	0.33	0.00	0.03	
14,499.14	92.89	179.33	12,062.50	-2,714.86	26.96	0.00	0.00	0.00	0.00	2000 FNL Sec 22
14,571.68	93.13	179.33	12,058.70	-2,787.30	27.81	0.33	0.33	0.00	-0.16	
14,999.88	93.13	179.33	12,035.35	-3,214.82	32.84	0.00	0.00	0.00	0.00	2500 FNL Sec 22
15,175.19	93.70	179.33	12,024.91	-3,389.81	34.90	0.33	0.33	0.00	0.00	
16,001.92	93.70	179.33	11,971.50	-4,214.76	44.60	0.00	0.00	0.00	0.00	3500 FNL Sec 22
16,301.96	93.10	179.33	11,953.69	-4,514.24	48.12	0.20	-0.20	0.00	-180.00	
17,003.48	93.10	179.33	11,915.70	-5,214.69	56.36	0.00	0.00	0.00	0.00	4500 FNL Sec 22
17,158.08	91.56	179.33	11,909.41	-5,369.15	58.17	1.00	-1.00	0.00	180.00	
17,783.85	91.56	179.33	11,892.40	-5,994.64	65.53	0.00	0.00	0.00	0.00	5280 FNL Sec 22
17,811.84	91.29	179.40	11,891.71	-6,022.62	65.84	1.00	-0.97	0.25	165.41	
23,052.63	91.29	179.40	11,774.00	-11,261.80	121.00	0.00	0.00	0.00	0.00	5230 FNL Sec 27
23,062.86	91.29	179.40	11,773.77	-11,272.02	121.11	0.00	0.00	0.00	0.00	PBHL- VCSU 22 27 #

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

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	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
100.00	0.00	0.00	100.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
200.00	0.00	0.00	200.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
300.00	0.00	0.00	300.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
400.00	0.00	0.00	400.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
500.00	0.00	0.00	500.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
600.00	0.00	0.00	600.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
700.00	0.00	0.00	700.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
800.00	0.00	0.00	800.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
900.00	0.00	0.00	900.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
1,000.00	0.00	0.00	1,000.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
1,100.00	0.00	0.00	1,100.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
1,200.00	0.00	0.00	1,200.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
1,300.00	0.00	0.00	1,300.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
1,400.00	0.00	0.00	1,400.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
1,500.00	0.00	0.00	1,500.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
1,600.00	0.00	0.00	1,600.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
1,700.00	0.00	0.00	1,700.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
1,800.00	0.00	0.00	1,800.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
1,900.00	0.00	0.00	1,900.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
2,000.00	0.00	0.00	2,000.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
2,100.00	0.00	0.00	2,100.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
2,200.00	0.00	0.00	2,200.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
2,300.00	0.00	0.00	2,300.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
2,400.00	0.00	0.00	2,400.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
2,500.00	0.00	0.00	2,500.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
2,600.00	0.00	0.00	2,600.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
2,700.00	0.00	0.00	2,700.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
2,800.00	0.00	0.00	2,800.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
2,900.00	0.00	0.00	2,900.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
3,000.00	0.00	0.00	3,000.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
3,100.00	0.00	0.00	3,100.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
3,200.00	0.00	0.00	3,200.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
3,300.00	0.00	0.00	3,300.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
3,400.00	0.00	0.00	3,400.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
3,500.00	0.00	0.00	3,500.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
3,600.00	0.00	0.00	3,600.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
3,700.00	0.00	0.00	3,700.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
3,800.00	0.00	0.00	3,800.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
3,900.00	0.00	0.00	3,900.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
4,000.00	0.00	0.00	4,000.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
4,100.00	0.00	0.00	4,100.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
4,200.00	0.00	0.00	4,200.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
4,300.00	0.00	0.00	4,300.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
4,400.00	0.00	0.00	4,400.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
4,500.00	0.00	0.00	4,500.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
4,600.00	0.00	0.00	4,600.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
4,700.00	0.00	0.00	4,700.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
4,800.00	0.00	0.00	4,800.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
4,900.00	0.00	0.00	4,900.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
5,000.00	0.00	0.00	5,000.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
5,100.00	0.00	0.00	5,100.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
5,200.00	0.00	0.00	5,200.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
5,300.00	0.00	0.00	5,300.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
5,400.00	0.00	0.00	5,400.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,500.00	0.00	0.00	5,500.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
5,600.00	0.00	0.00	5,600.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
5,700.00	0.00	0.00	5,700.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
5,800.00	0.00	0.00	5,800.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
5,900.00	0.00	0.00	5,900.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
6,000.00	0.00	0.00	6,000.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
6,100.00	0.00	0.00	6,100.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
6,200.00	0.00	0.00	6,200.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
6,300.00	0.00	0.00	6,300.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
6,400.00	0.00	0.00	6,400.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
6,500.00	0.00	0.00	6,500.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
6,600.00	0.00	0.00	6,600.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
6,700.00	0.00	0.00	6,700.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
6,800.00	0.00	0.00	6,800.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
6,900.00	0.00	0.00	6,900.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
7,000.00	0.00	0.00	7,000.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
7,100.00	0.00	0.00	7,100.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
7,200.00	0.00	0.00	7,200.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
7,300.00	0.00	0.00	7,300.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
7,400.00	0.00	0.00	7,400.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
7,500.00	0.00	0.00	7,500.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
7,600.00	0.00	0.00	7,600.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
7,700.00	0.00	0.00	7,700.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
7,800.00	0.00	0.00	7,800.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
7,900.00	0.00	0.00	7,900.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
8,000.00	0.00	0.00	8,000.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
8,100.00	0.00	0.00	8,100.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
8,200.00	0.00	0.00	8,200.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
8,300.00	0.00	0.00	8,300.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
8,400.00	0.00	0.00	8,400.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
8,500.00	0.00	0.00	8,500.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
8,600.00	0.00	0.00	8,600.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
8,700.00	0.00	0.00	8,700.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
8,800.00	0.00	0.00	8,800.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
8,900.00	0.00	0.00	8,900.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
9,000.00	0.00	0.00	9,000.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
9,100.00	0.00	0.00	9,100.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
9,200.00	0.00	0.00	9,200.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
9,300.00	0.00	0.00	9,300.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
9,400.00	0.00	0.00	9,400.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
9,500.00	0.00	0.00	9,500.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
9,600.00	0.00	0.00	9,600.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
9,700.00	0.00	0.00	9,700.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
9,800.00	0.00	0.00	9,800.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
9,900.00	0.00	0.00	9,900.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
10,000.00	0.00	0.00	10,000.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
10,100.00	0.00	0.00	10,100.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
10,200.00	0.00	0.00	10,200.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
10,300.00	0.00	0.00	10,300.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
10,400.00	0.00	0.00	10,400.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
10,500.00	0.00	0.00	10,500.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
10,600.00	0.00	0.00	10,600.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
10,700.00	0.00	0.00	10,700.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
10,800.00	0.00	0.00	10,800.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W
10,900.00	0.00	0.00	10,900.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
11,000.00	0.00	0.00	11,000.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W	
11,100.00	0.00	0.00	11,100.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W	
11,200.00	0.00	0.00	11,200.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W	
11,300.00	0.00	0.00	11,300.00	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W	
11,374.80	0.00	0.00	11,374.80	0.00	0.00	667,009.70	846,075.20	32° 49' 46.935 N	103° 20' 28.512 W	
Start Build 8.00 at 11374.80 MD										
11,400.00	2.02	179.71	11,400.00	-0.44	0.00	667,009.26	846,075.20	32° 49' 46.931 N	103° 20' 28.512 W	
11,500.00	10.02	179.71	11,499.36	-10.92	0.05	666,998.79	846,075.25	32° 49' 46.827 N	103° 20' 28.513 W	
11,600.00	18.02	179.71	11,596.31	-35.11	0.18	666,974.59	846,075.37	32° 49' 46.588 N	103° 20' 28.514 W	
11,700.00	26.02	179.71	11,688.94	-72.57	0.36	666,937.13	846,075.56	32° 49' 46.217 N	103° 20' 28.516 W	
11,800.00	34.02	179.71	11,775.46	-122.55	0.61	666,887.15	846,075.81	32° 49' 45.723 N	103° 20' 28.519 W	
11,900.00	42.02	179.71	11,854.18	-184.09	0.92	666,825.61	846,076.12	32° 49' 45.114 N	103° 20' 28.522 W	
12,000.00	50.02	179.71	11,923.57	-255.98	1.28	666,753.72	846,076.48	32° 49' 44.402 N	103° 20' 28.526 W	
12,100.00	58.02	179.71	11,982.28	-336.84	1.68	666,672.87	846,076.88	32° 49' 43.603 N	103° 20' 28.530 W	
12,200.00	66.02	179.71	12,029.16	-425.07	2.12	666,584.63	846,077.32	32° 49' 42.730 N	103° 20' 28.534 W	
12,300.00	74.02	179.71	12,063.31	-518.97	2.59	666,490.73	846,077.79	32° 49' 41.800 N	103° 20' 28.539 W	
12,400.00	82.02	179.71	12,084.06	-616.71	3.08	666,392.99	846,078.28	32° 49' 40.833 N	103° 20' 28.544 W	
12,499.80	90.00	179.71	12,091.00	-716.19	3.57	666,293.52	846,078.77	32° 49' 39.849 N	103° 20' 28.549 W	
Start DLS 1.00 TFO -90.02 at 12499.80 MD										
12,500.00	90.00	179.71	12,091.00	-716.39	3.58	666,293.32	846,078.77	32° 49' 39.847 N	103° 20' 28.549 W	
12,538.66	90.00	179.33	12,091.00	-755.04	3.90	666,254.66	846,079.10	32° 49' 39.465 N	103° 20' 28.550 W	
Start 959.95 hold at 12538.66 MD										
12,600.00	90.00	179.33	12,091.00	-816.38	4.62	666,193.32	846,079.82	32° 49' 38.858 N	103° 20' 28.548 W	
12,700.00	90.00	179.33	12,091.00	-916.38	5.80	666,093.33	846,081.00	32° 49' 37.868 N	103° 20' 28.545 W	
12,800.00	90.00	179.33	12,091.00	-1,016.37	6.98	665,993.34	846,082.18	32° 49' 36.879 N	103° 20' 28.542 W	
12,900.00	90.00	179.33	12,091.00	-1,116.36	8.15	665,893.35	846,083.35	32° 49' 35.890 N	103° 20' 28.540 W	
13,000.00	90.00	179.33	12,091.00	-1,216.35	9.33	665,793.35	846,084.53	32° 49' 34.900 N	103° 20' 28.537 W	
13,100.00	90.00	179.33	12,091.00	-1,316.35	10.51	665,693.36	846,085.71	32° 49' 33.911 N	103° 20' 28.534 W	
13,200.00	90.00	179.33	12,091.00	-1,416.34	11.69	665,593.37	846,086.89	32° 49' 32.921 N	103° 20' 28.531 W	
13,300.00	90.00	179.33	12,091.00	-1,516.33	12.86	665,493.37	846,088.06	32° 49' 31.932 N	103° 20' 28.528 W	
13,400.00	90.00	179.33	12,091.00	-1,616.33	14.04	665,393.38	846,089.24	32° 49' 30.943 N	103° 20' 28.526 W	
13,498.60	90.00	179.33	12,091.00	-1,714.92	15.20	665,294.78	846,090.40	32° 49' 29.967 N	103° 20' 28.523 W	
Start DLS 0.33 TFO 0.03 at 13498.60 MD										
13,500.00	90.00	179.33	12,091.00	-1,716.32	15.22	665,293.39	846,090.42	32° 49' 29.953 N	103° 20' 28.523 W	
13,600.00	90.34	179.33	12,090.70	-1,816.31	16.40	665,193.40	846,091.59	32° 49' 28.964 N	103° 20' 28.520 W	
13,700.00	90.67	179.33	12,089.83	-1,916.30	17.57	665,093.41	846,092.77	32° 49' 27.974 N	103° 20' 28.517 W	
13,800.00	91.00	179.33	12,088.37	-2,016.28	18.75	664,993.42	846,093.95	32° 49' 26.985 N	103° 20' 28.515 W	
13,900.00	91.33	179.33	12,086.33	-2,116.26	19.92	664,893.45	846,095.12	32° 49' 25.996 N	103° 20' 28.512 W	
14,000.00	91.66	179.33	12,083.72	-2,216.22	21.10	664,793.49	846,096.30	32° 49' 25.007 N	103° 20' 28.509 W	
14,100.00	92.00	179.33	12,080.52	-2,316.16	22.28	664,693.55	846,097.47	32° 49' 24.018 N	103° 20' 28.506 W	
14,200.00	92.33	179.33	12,076.75	-2,416.08	23.45	664,593.63	846,098.65	32° 49' 23.029 N	103° 20' 28.503 W	
14,300.00	92.66	179.33	12,072.39	-2,515.98	24.62	664,493.73	846,099.82	32° 49' 22.041 N	103° 20' 28.501 W	
14,367.73	92.89	179.33	12,069.12	-2,583.62	25.42	664,426.09	846,100.62	32° 49' 21.371 N	103° 20' 28.499 W	
Start 131.41 hold at 14367.73 MD										
14,400.00	92.89	179.33	12,067.49	-2,615.85	25.80	664,393.86	846,101.00	32° 49' 21.053 N	103° 20' 28.498 W	
14,499.14	92.89	179.33	12,062.50	-2,714.86	26.96	664,294.85	846,102.16	32° 49' 20.073 N	103° 20' 28.495 W	
Start DLS 0.33 TFO -0.16 14499.14 MD										
14,500.00	92.89	179.33	12,062.46	-2,715.72	26.97	664,293.99	846,102.17	32° 49' 20.064 N	103° 20' 28.495 W	
14,571.68	93.13	179.33	12,058.70	-2,787.30	27.81	664,222.41	846,103.01	32° 49' 19.356 N	103° 20' 28.493 W	
Start 428.19 hold at 14571.68 MD										
14,600.00	93.13	179.33	12,057.15	-2,815.57	28.14	664,194.14	846,103.34	32° 49' 19.076 N	103° 20' 28.492 W	
14,700.00	93.13	179.33	12,051.70	-2,915.41	29.32	664,094.30	846,104.52	32° 49' 18.089 N	103° 20' 28.490 W	
14,800.00	93.13	179.33	12,046.25	-3,015.26	30.49	663,994.45	846,105.69	32° 49' 17.101 N	103° 20' 28.487 W	
14,900.00	93.13	179.33	12,040.80	-3,115.10	31.67	663,894.61	846,106.87	32° 49' 16.113 N	103° 20' 28.484 W	

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
14,999.88	93.13	179.33	12,035.35	-3,214.82	32.84	663,794.89	846,108.04	32° 49' 15.126 N	103° 20' 28.481 W	
Start DLS 0.33 TFO 0.00 1499.88 MD										
15,000.00	93.13	179.33	12,035.34	-3,214.95	32.84	663,794.77	846,108.04	32° 49' 15.125 N	103° 20' 28.481 W	
15,100.00	93.46	179.33	12,029.60	-3,314.77	34.02	663,694.94	846,109.21	32° 49' 14.137 N	103° 20' 28.478 W	
15,175.19	93.70	179.33	12,024.91	-3,389.81	34.90	663,619.90	846,110.10	32° 49' 13.394 N	103° 20' 28.476 W	
Start 826.73 hold at 15175.19 MD										
15,200.00	93.70	179.33	12,023.31	-3,414.57	35.19	663,595.14	846,110.39	32° 49' 13.150 N	103° 20' 28.476 W	
15,300.00	93.70	179.33	12,016.85	-3,514.35	36.36	663,495.36	846,111.56	32° 49' 12.162 N	103° 20' 28.473 W	
15,400.00	93.70	179.33	12,010.39	-3,614.14	37.54	663,395.58	846,112.73	32° 49' 11.175 N	103° 20' 28.470 W	
15,500.00	93.70	179.33	12,003.93	-3,713.92	38.71	663,295.79	846,113.91	32° 49' 10.188 N	103° 20' 28.467 W	
15,600.00	93.70	179.33	11,997.46	-3,813.71	39.88	663,196.01	846,115.08	32° 49' 9.200 N	103° 20' 28.465 W	
15,700.00	93.70	179.33	11,991.00	-3,913.49	41.06	663,096.22	846,116.25	32° 49' 8.213 N	103° 20' 28.462 W	
15,800.00	93.70	179.33	11,984.54	-4,013.27	42.23	662,996.44	846,117.43	32° 49' 7.226 N	103° 20' 28.459 W	
15,900.00	93.70	179.33	11,978.08	-4,113.06	43.40	662,896.66	846,118.60	32° 49' 6.238 N	103° 20' 28.456 W	
16,000.00	93.70	179.33	11,971.62	-4,212.84	44.58	662,796.87	846,119.77	32° 49' 5.251 N	103° 20' 28.453 W	
16,001.92	93.70	179.33	11,971.50	-4,214.76	44.60	662,794.96	846,119.80	32° 49' 5.232 N	103° 20' 28.453 W	
Start DLS 0.20 TFO -180.00 at 16001.92 MD										
16,100.00	93.51	179.33	11,965.33	-4,312.64	45.75	662,697.08	846,120.95	32° 49' 4.263 N	103° 20' 28.451 W	
16,200.00	93.31	179.33	11,959.39	-4,412.45	46.92	662,597.26	846,122.12	32° 49' 3.276 N	103° 20' 28.448 W	
16,300.00	93.11	179.33	11,953.79	-4,512.29	48.10	662,497.42	846,123.30	32° 49' 2.288 N	103° 20' 28.445 W	
16,301.96	93.10	179.33	11,953.69	-4,514.24	48.12	662,495.47	846,123.32	32° 49' 2.269 N	103° 20' 28.445 W	
Start 701.53 hold at 16301.96 MD										
16,400.00	93.10	179.33	11,948.38	-4,612.14	49.27	662,397.58	846,124.47	32° 49' 1.300 N	103° 20' 28.442 W	
16,500.00	93.10	179.33	11,942.96	-4,711.98	50.45	662,297.73	846,125.64	32° 49' 0.312 N	103° 20' 28.440 W	
16,600.00	93.10	179.33	11,937.55	-4,811.83	51.62	662,197.89	846,126.82	32° 48' 59.324 N	103° 20' 28.437 W	
16,700.00	93.10	179.33	11,932.13	-4,911.67	52.79	662,098.04	846,127.99	32° 48' 58.336 N	103° 20' 28.434 W	
16,800.00	93.10	179.33	11,926.72	-5,011.52	53.97	661,998.19	846,129.17	32° 48' 57.348 N	103° 20' 28.431 W	
16,900.00	93.10	179.33	11,921.30	-5,111.37	55.14	661,898.35	846,130.34	32° 48' 56.360 N	103° 20' 28.428 W	
17,000.00	93.10	179.33	11,915.89	-5,211.21	56.32	661,798.50	846,131.52	32° 48' 55.372 N	103° 20' 28.426 W	
17,003.48	93.10	179.33	11,915.70	-5,214.69	56.36	661,795.03	846,131.56	32° 48' 55.338 N	103° 20' 28.426 W	
Start DLS 1.00 TFO 180.00 at 17003.48 MD										
17,100.00	92.14	179.33	11,911.29	-5,311.10	57.49	661,698.62	846,132.69	32° 48' 54.384 N	103° 20' 28.423 W	
17,158.08	91.56	179.33	11,909.41	-5,369.15	58.17	661,640.57	846,133.37	32° 48' 53.810 N	103° 20' 28.421 W	
Start 625.76 hold at 17158.08 MD										
17,200.00	91.56	179.33	11,908.27	-5,411.05	58.67	661,598.67	846,133.86	32° 48' 53.395 N	103° 20' 28.420 W	
17,300.00	91.56	179.33	11,905.55	-5,511.00	59.84	661,498.71	846,135.04	32° 48' 52.406 N	103° 20' 28.417 W	
17,400.00	91.56	179.33	11,902.84	-5,610.96	61.02	661,398.76	846,136.22	32° 48' 51.417 N	103° 20' 28.415 W	
17,500.00	91.56	179.33	11,900.12	-5,710.92	62.19	661,298.80	846,137.39	32° 48' 50.428 N	103° 20' 28.412 W	
17,600.00	91.56	179.33	11,897.40	-5,810.87	63.37	661,198.84	846,138.57	32° 48' 49.439 N	103° 20' 28.409 W	
17,700.00	91.56	179.33	11,894.68	-5,910.83	64.54	661,098.89	846,139.74	32° 48' 48.450 N	103° 20' 28.406 W	
17,783.85	91.56	179.33	11,892.40	-5,994.64	65.53	661,015.08	846,140.73	32° 48' 47.620 N	103° 20' 28.404 W	
Start DLS 1.00 TFO 165.41 at 17783.85 MD										
17,800.00	91.40	179.37	11,891.98	-6,010.78	65.71	660,998.93	846,140.91	32° 48' 47.461 N	103° 20' 28.404 W	
17,811.84	91.29	179.40	11,891.71	-6,022.62	65.84	660,987.09	846,141.04	32° 48' 47.344 N	103° 20' 28.403 W	
Start 5240.79 hold at 17811.84 MD										
17,900.00	91.29	179.40	11,889.73	-6,110.75	66.77	660,898.96	846,141.97	32° 48' 46.472 N	103° 20' 28.402 W	
18,000.00	91.29	179.40	11,887.48	-6,210.72	67.82	660,798.99	846,143.02	32° 48' 45.482 N	103° 20' 28.401 W	
18,100.00	91.29	179.40	11,885.23	-6,310.69	68.87	660,699.03	846,144.07	32° 48' 44.493 N	103° 20' 28.399 W	
18,200.00	91.29	179.40	11,882.99	-6,410.66	69.93	660,599.06	846,145.12	32° 48' 43.504 N	103° 20' 28.398 W	
18,300.00	91.29	179.40	11,880.74	-6,510.63	70.98	660,499.09	846,146.18	32° 48' 42.515 N	103° 20' 28.397 W	
18,400.00	91.29	179.40	11,878.50	-6,610.60	72.03	660,399.12	846,147.23	32° 48' 41.526 N	103° 20' 28.395 W	
18,500.00	91.29	179.40	11,876.25	-6,710.57	73.08	660,299.15	846,148.28	32° 48' 40.537 N	103° 20' 28.394 W	
18,600.00	91.29	179.40	11,874.00	-6,810.54	74.14	660,199.18	846,149.33	32° 48' 39.547 N	103° 20' 28.393 W	
18,700.00	91.29	179.40	11,871.76	-6,910.51	75.19	660,099.21	846,150.39	32° 48' 38.558 N	103° 20' 28.391 W	

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
18,800.00	91.29	179.40	11,869.51	-7,010.48	76.24	659,999.24	846,151.44	32° 48' 37.569 N	103° 20' 28.390 W	
18,900.00	91.29	179.40	11,867.27	-7,110.45	77.29	659,899.27	846,152.49	32° 48' 36.580 N	103° 20' 28.389 W	
19,000.00	91.29	179.40	11,865.02	-7,210.42	78.35	659,799.30	846,153.54	32° 48' 35.591 N	103° 20' 28.387 W	
19,100.00	91.29	179.40	11,862.77	-7,310.38	79.40	659,699.34	846,154.60	32° 48' 34.602 N	103° 20' 28.386 W	
19,200.00	91.29	179.40	11,860.53	-7,410.35	80.45	659,599.37	846,155.65	32° 48' 33.613 N	103° 20' 28.385 W	
19,300.00	91.29	179.40	11,858.28	-7,510.32	81.50	659,499.40	846,156.70	32° 48' 32.623 N	103° 20' 28.383 W	
19,400.00	91.29	179.40	11,856.04	-7,610.29	82.56	659,399.43	846,157.75	32° 48' 31.634 N	103° 20' 28.382 W	
19,500.00	91.29	179.40	11,853.79	-7,710.26	83.61	659,299.46	846,158.81	32° 48' 30.645 N	103° 20' 28.381 W	
19,600.00	91.29	179.40	11,851.54	-7,810.23	84.66	659,199.49	846,159.86	32° 48' 29.656 N	103° 20' 28.379 W	
19,700.00	91.29	179.40	11,849.30	-7,910.20	85.71	659,099.52	846,160.91	32° 48' 28.667 N	103° 20' 28.378 W	
19,800.00	91.29	179.40	11,847.05	-8,010.17	86.77	658,999.55	846,161.96	32° 48' 27.678 N	103° 20' 28.377 W	
19,900.00	91.29	179.40	11,844.81	-8,110.14	87.82	658,899.58	846,163.02	32° 48' 26.688 N	103° 20' 28.375 W	
20,000.00	91.29	179.40	11,842.56	-8,210.11	88.87	658,799.61	846,164.07	32° 48' 25.699 N	103° 20' 28.374 W	
20,100.00	91.29	179.40	11,840.31	-8,310.08	89.92	658,699.64	846,165.12	32° 48' 24.710 N	103° 20' 28.373 W	
20,200.00	91.29	179.40	11,838.07	-8,410.05	90.98	658,599.68	846,166.17	32° 48' 23.721 N	103° 20' 28.371 W	
20,300.00	91.29	179.40	11,835.82	-8,510.02	92.03	658,499.71	846,167.23	32° 48' 22.732 N	103° 20' 28.370 W	
20,400.00	91.29	179.40	11,833.58	-8,609.98	93.08	658,399.74	846,168.28	32° 48' 21.743 N	103° 20' 28.369 W	
20,500.00	91.29	179.40	11,831.33	-8,709.95	94.13	658,299.77	846,169.33	32° 48' 20.753 N	103° 20' 28.367 W	
20,600.00	91.29	179.40	11,829.08	-8,809.92	95.18	658,199.80	846,170.38	32° 48' 19.764 N	103° 20' 28.366 W	
20,700.00	91.29	179.40	11,826.84	-8,909.89	96.24	658,099.83	846,171.44	32° 48' 18.775 N	103° 20' 28.365 W	
20,800.00	91.29	179.40	11,824.59	-9,009.86	97.29	657,999.86	846,172.49	32° 48' 17.786 N	103° 20' 28.363 W	
20,900.00	91.29	179.40	11,822.35	-9,109.83	98.34	657,899.89	846,173.54	32° 48' 16.797 N	103° 20' 28.362 W	
21,000.00	91.29	179.40	11,820.10	-9,209.80	99.39	657,799.92	846,174.59	32° 48' 15.808 N	103° 20' 28.361 W	
21,100.00	91.29	179.40	11,817.86	-9,309.77	100.45	657,699.95	846,175.65	32° 48' 14.819 N	103° 20' 28.359 W	
21,200.00	91.29	179.40	11,815.61	-9,409.74	101.50	657,599.99	846,176.70	32° 48' 13.829 N	103° 20' 28.358 W	
21,300.00	91.29	179.40	11,813.36	-9,509.71	102.55	657,500.02	846,177.75	32° 48' 12.840 N	103° 20' 28.357 W	
21,400.00	91.29	179.40	11,811.12	-9,609.68	103.60	657,400.05	846,178.80	32° 48' 11.851 N	103° 20' 28.355 W	
21,500.00	91.29	179.40	11,808.87	-9,709.65	104.66	657,300.08	846,179.86	32° 48' 10.862 N	103° 20' 28.354 W	
21,600.00	91.29	179.40	11,806.63	-9,809.62	105.71	657,200.11	846,180.91	32° 48' 9.873 N	103° 20' 28.353 W	
21,700.00	91.29	179.40	11,804.38	-9,909.58	106.76	657,100.14	846,181.96	32° 48' 8.884 N	103° 20' 28.351 W	
21,800.00	91.29	179.40	11,802.13	-10,009.55	107.81	657,000.17	846,183.01	32° 48' 7.894 N	103° 20' 28.350 W	
21,900.00	91.29	179.40	11,799.89	-10,109.52	108.87	656,900.20	846,184.07	32° 48' 6.905 N	103° 20' 28.349 W	
22,000.00	91.29	179.40	11,797.64	-10,209.49	109.92	656,800.23	846,185.12	32° 48' 5.916 N	103° 20' 28.347 W	
22,100.00	91.29	179.40	11,795.40	-10,309.46	110.97	656,700.26	846,186.17	32° 48' 4.927 N	103° 20' 28.346 W	
22,200.00	91.29	179.40	11,793.15	-10,409.43	112.02	656,600.30	846,187.22	32° 48' 3.938 N	103° 20' 28.344 W	
22,300.00	91.29	179.40	11,790.90	-10,509.40	113.08	656,500.33	846,188.28	32° 48' 2.949 N	103° 20' 28.343 W	
22,400.00	91.29	179.40	11,788.66	-10,609.37	114.13	656,400.36	846,189.33	32° 48' 1.959 N	103° 20' 28.342 W	
22,500.00	91.29	179.40	11,786.41	-10,709.34	115.18	656,300.39	846,190.38	32° 48' 0.970 N	103° 20' 28.340 W	
22,600.00	91.29	179.40	11,784.17	-10,809.31	116.23	656,200.42	846,191.43	32° 47' 59.981 N	103° 20' 28.339 W	
22,700.00	91.29	179.40	11,781.92	-10,909.28	117.29	656,100.45	846,192.49	32° 47' 58.992 N	103° 20' 28.338 W	
22,800.00	91.29	179.40	11,779.67	-11,009.25	118.34	656,000.48	846,193.54	32° 47' 58.003 N	103° 20' 28.336 W	
22,900.00	91.29	179.40	11,777.43	-11,109.22	119.39	655,900.51	846,194.59	32° 47' 57.014 N	103° 20' 28.335 W	
23,000.00	91.29	179.40	11,775.18	-11,209.18	120.44	655,800.54	846,195.64	32° 47' 56.025 N	103° 20' 28.334 W	
23,052.63	91.29	179.40	11,774.00	-11,261.80	121.00	655,747.93	846,196.20	32° 47' 55.504 N	103° 20' 28.333 W	
Start 10.23 hold at 23052.63 MD										
23,062.86	91.29	179.40	11,773.77	-11,272.02	121.11	655,737.70	846,196.30	32° 47' 55.403 N	103° 20' 28.333 W	
TD at 23062.86 MD										

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

Design Targets										
Target Name										
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)			
PBHL- VCSU 22 27 #2H	0.00	0.00	11,773.77	-11,272.02	121.10	655,737.70	846,196.30	32° 47' 55.403 N	103° 20' 28.333 W	
- plan misses target center by 0.01ft at 23062.86ft MD (11773.77 TVD, -11272.02 N, 121.11 E)										
- Point										
5230 FNL Sec 27	0.00	0.00	11,774.00	-11,261.80	121.00	655,747.93	846,196.20	32° 47' 55.504 N	103° 20' 28.333 W	
- plan hits target center										
- Point										
LTP- VCSU 22 27 #2H	0.00	0.00	11,774.89	-11,222.02	120.60	655,787.70	846,195.80	32° 47' 55.898 N	103° 20' 28.333 W	
- plan misses target center by 0.02ft at 23012.84ft MD (11774.89 TVD, -11222.02 N, 120.58 E)										
- Point										
4000 FNL Sec 27	0.00	0.00	11,801.60	-10,031.83	107.16	656,977.89	846,182.36	32° 48' 7.674 N	103° 20' 28.360 W	
- plan misses target center by 0.89ft at 21822.28ft MD (11801.63 TVD, -10031.82 N, 108.05 E)										
- Point										
2000 FNL Sec 27	0.00	0.00	11,847.00	-8,031.87	85.57	658,977.85	846,160.77	32° 48' 27.463 N	103° 20' 28.393 W	
- plan misses target center by 1.49ft at 19821.68ft MD (11846.57 TVD, -8031.84 N, 86.99 E)										
- Point										
1000 FNL Sec 27	0.00	0.00	11,870.00	-7,031.87	75.75	659,977.85	846,150.95	32° 48' 37.358 N	103° 20' 28.398 W	
- plan misses target center by 1.20ft at 18821.37ft MD (11869.03 TVD, -7031.84 N, 76.47 E)										
- Point										
5280 FNL Sec 22	0.00	0.00	11,892.40	-5,994.64	65.53	661,015.08	846,140.73	32° 48' 47.620 N	103° 20' 28.404 W	
- plan hits target center										
- Point										
5000 FNL Sec 22	0.00	0.00	11,900.00	-5,714.66	62.24	661,295.06	846,137.44	32° 48' 50.391 N	103° 20' 28.412 W	
- plan misses target center by 0.02ft at 17503.74ft MD (11900.02 TVD, -5714.66 N, 62.24 E)										
- Point										
4500 FNL Sec 22	0.00	0.00	11,915.70	-5,214.69	56.36	661,795.03	846,131.56	32° 48' 55.338 N	103° 20' 28.426 W	
- plan hits target center										
- Point										
4100 FNL Sec 22	0.00	0.00	11,937.00	-4,814.72	51.65	662,195.00	846,126.85	32° 48' 59.295 N	103° 20' 28.437 W	
- plan misses target center by 0.39ft at 16602.91ft MD (11937.39 TVD, -4814.74 N, 51.65 E)										
- Point										
4000 FNL Sec 22	0.00	0.00	11,939.20	-4,714.72	50.48	662,294.99	846,125.68	32° 49' 0.285 N	103° 20' 28.440 W	
- plan misses target center by 3.61ft at 16502.94ft MD (11942.80 TVD, -4714.92 N, 50.48 E)										
- Point										
3500 FNL Sec 22	0.00	0.01	11,971.50	-4,214.76	44.60	662,794.96	846,119.80	32° 49' 5.232 N	103° 20' 28.453 W	
- plan hits target center										
- Point										
3000 FNL Sec 22	0.00	0.00	12,006.00	-3,714.79	38.72	663,294.92	846,113.92	32° 49' 10.179 N	103° 20' 28.467 W	
- plan misses target center by 2.13ft at 15500.73ft MD (12003.88 TVD, -3714.65 N, 38.72 E)										
- Point										
2500 FNL Sec 22	0.00	0.00	12,035.35	-3,214.82	32.84	663,794.89	846,108.04	32° 49' 15.126 N	103° 20' 28.481 W	
- plan hits target center										
- Point										
2000 FNL Sec 22	0.00	0.00	12,062.50	-2,714.86	26.96	664,294.85	846,102.16	32° 49' 20.073 N	103° 20' 28.495 W	
- plan hits target center										
- Point										
1500 FNL Sec 22	0.00	0.00	12,084.40	-2,214.89	21.08	664,794.82	846,096.28	32° 49' 25.020 N	103° 20' 28.509 W	
- plan misses target center by 0.64ft at 13998.66ft MD (12083.76 TVD, -2214.87 N, 21.08 E)										
- Point										
LP- VCSU 22 27 #2H	0.00	0.00	12,091.00	-865.00	5.20	666,144.70	846,080.40	32° 49' 38.377 N	103° 20' 28.547 W	
- plan misses target center by 0.01ft at 12648.62ft MD (12091.00 TVD, -865.00 N, 5.20 E)										
- Point										

Planning Report - Geographic

Database:	EDM	Local Co-ordinate Reference:	Well Vindicator Canyon State Unit 22 27 #2H
Company:	Manzano, LLC	TVD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL 3846' + RBK 20' @ 3866.00ft
Site:	Vindicator Canyon State Unit 22 27 #2H	North Reference:	Grid
Well:	Vindicator Canyon State Unit 22 27 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3		

1000 FNL Sec 22	0.00	0.00	12,091.00	-1,714.92	15.20	665,294.78	846,090.40	32° 49' 29.967 N	103° 20' 28.523 W
- plan hits target center									
- Point									
500 FNL Sec 22	0.00	0.00	12,091.00	-1,214.96	9.32	665,794.75	846,084.52	32° 49' 34.914 N	103° 20' 28.537 W
- plan misses target center by 0.01ft at 12998.60ft MD (12091.00 TVD, -1214.96 N, 9.32 E)									
- Point									
FTP- VCSU 22 27 #2H	0.00	0.00	12,091.00	-815.00	4.70	666,194.70	846,079.90	32° 49' 38.871 N	103° 20' 28.547 W
- plan misses target center by 0.09ft at 12598.62ft MD (12091.00 TVD, -815.00 N, 4.61 E)									
- Point									

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			Comment
		+N/-S (ft)	+E/-W (ft)		
11,374.80	11,374.80	0.00	0.00		Start Build 8.00 at 11374.80 MD
12,499.80	12,091.00	-716.19	3.57		Start DLS 1.00 TFO -90.02 at 12499.80 MD
12,538.66	12,091.00	-755.04	3.90		Start 959.95 hold at 12538.66 MD
13,498.60	12,091.00	-1,714.92	15.20		Start DLS 0.33 TFO 0.03 at 13498.60 MD
14,367.73	12,069.12	-2,583.62	25.42		Start 131.41 hold at 14367.73 MD
14,499.14	12,062.50	-2,714.86	26.96		Start DLS 0.33 TFO -0.16 14499.14 MD
14,571.68	12,058.70	-2,787.30	27.81		Start 428.19 hold at 14571.68 MD
14,999.88	12,035.35	-3,214.82	32.84		Start DLS 0.33 TFO 0.00 1499.88 MD
15,175.19	12,024.91	-3,389.81	34.90		Start 826.73 hold at 15175.19 MD
16,001.92	11,971.50	-4,214.76	44.60		Start DLS 0.20 TFO -180.00 at 16001.92 MD
16,301.96	11,953.69	-4,514.24	48.12		Start 701.53 hold at 16301.96 MD
17,003.48	11,915.70	-5,214.69	56.36		Start DLS 1.00 TFO 180.00 at 17003.48 MD
17,158.08	11,909.41	-5,369.15	58.17		Start 625.76 hold at 17158.08 MD
17,783.85	11,892.40	-5,994.64	65.53		Start DLS 1.00 TFO 165.41 at 17783.85 MD
17,811.84	11,891.71	-6,022.62	65.84		Start 5240.79 hold at 17811.84 MD
23,052.63	11,774.00	-11,261.80	121.00		Start 10.23 hold at 23052.63 MD
23,062.86	11,773.77	-11,272.02	121.11		TD at 23062.86 MD