



Directional Survey Certification

2948 I-70 Business Loop
Grand Junction, CO 81504
(970)-245-9447 Fax (970)-245-9454

Operator	TEP Rocky Mountain, LLC.
Well Name & No.	PA 342-26
County & State	Garfield County, CO
SDI Job No.	OP.006081
Rig	H&P 271

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 123 feet to a measured depth of 8,317 feet is true and correct as determined from all available records.

A handwritten signature in black ink, appearing to read 'Mel Mireles Jr.', written over a horizontal line.

Signature

4-Dec-17

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well PA 342-26 - Slot PA 342-26 (B3)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 5224 & RKB 24' @ 5248.00usft
Site:	PA 22-25 Pad	MD Reference:	GL 5224 & RKB 24' @ 5248.00usft
Well:	PA 342-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

Project	Garfield County, CO NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		PA 22-25 Pad			
Site Position:		Northing:	1,615,186.77 usft	Latitude:	39.4968742
From:	Map	Easting:	2,308,728.18 usft	Longitude:	-107.9499045
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.55 °

Well	PA 342-26 - Slot PA 342-26 (B3), B3					
Well Position	+N/-S	0.00 usft	Northing:	1,615,199.67 usft	Latitude:	39.4969111
	+E/-W	0.00 usft	Easting:	2,308,748.03 usft	Longitude:	-107.9498355
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,224.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/21/2017	9.40	65.82	51,685

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	292.08	

Survey Program	Date	12/1/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
123.00	583.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
655.00	1,088.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,173.00	8,317.00	Survey #3 - Production MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	

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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.01	0.00	171.74	0.01	0.00	0.00	0.00	0.00	0.00	0.00	
SHL (PA 342-26)										
123.00	0.35	171.74	123.00	-0.37	0.05	-0.19	0.28	0.28	0.00	
First SDI Gyro MWD Survey										
216.00	0.26	224.38	216.00	-0.80	-0.05	-0.25	0.30	-0.10	56.60	
308.00	1.85	319.57	307.98	0.18	-1.16	1.14	2.06	1.73	103.47	
401.00	5.54	328.18	400.77	5.14	-4.50	6.10	4.00	3.97	9.26	

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Site:	PA 22-25 Pad	MD Reference:	GL 5224 & RKB 24' @ 5248.00usft
Well:	PA 342-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

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)
492.00	7.74	318.43	491.16	13.45	-10.89	15.15	2.71	2.42	-10.71
583.00	8.71	302.34	581.23	21.73	-20.78	27.42	2.73	1.07	-17.68
Last SDI Gyro MWD Survey									
655.00	10.02	294.43	652.28	27.23	-31.09	39.04	2.55	1.82	-10.99
First SDI Surface MWD Survey									
747.00	12.07	289.24	742.57	33.71	-47.46	56.65	2.47	2.23	-5.64
839.00	14.31	285.89	832.14	40.00	-67.48	77.56	2.57	2.43	-3.64
933.00	16.95	283.86	922.66	46.46	-91.96	102.68	2.87	2.81	-2.16
1,026.00	19.61	282.21	1,010.95	53.01	-120.38	131.48	2.91	2.86	-1.77
1,088.00	21.46	281.42	1,069.01	57.46	-141.66	152.87	3.02	2.98	-1.27
Last SDI Surface MWD Survey									
1,173.00	22.62	281.58	1,147.80	63.82	-172.92	184.23	1.37	1.36	0.19
First SDI Production MWD Survey									
1,267.00	24.42	283.17	1,233.99	71.87	-209.55	221.20	2.03	1.91	1.69
1,362.00	24.38	282.00	1,320.50	80.43	-247.85	259.91	0.51	-0.04	-1.23
1,457.00	24.56	281.95	1,406.97	88.59	-286.35	298.65	0.19	0.19	-0.05
1,551.00	24.19	281.75	1,492.59	96.56	-324.31	336.83	0.40	-0.39	-0.21
1,646.00	23.83	282.56	1,579.37	104.69	-362.10	374.90	0.51	-0.38	0.85
1,741.00	24.18	285.74	1,666.16	114.15	-399.56	413.17	1.41	0.37	3.35
1,836.00	25.64	288.32	1,752.32	125.89	-437.80	453.02	1.92	1.54	2.72
1,930.00	24.49	287.56	1,837.47	138.16	-475.69	492.74	1.27	-1.22	-0.81
2,025.00	23.30	287.31	1,924.32	149.69	-512.40	531.09	1.26	-1.25	-0.26
2,120.00	24.91	287.95	2,011.04	161.44	-549.37	569.77	1.72	1.69	0.67
2,214.00	23.79	286.92	2,096.67	173.06	-586.34	608.40	1.27	-1.19	-1.10
2,309.00	22.94	288.17	2,183.88	184.41	-622.27	645.96	1.04	-0.89	1.32
2,404.00	23.93	287.08	2,271.05	195.85	-658.28	683.62	1.14	1.04	-1.15
2,498.00	25.94	286.43	2,356.28	207.26	-696.22	723.08	2.16	2.14	-0.69
2,592.00	26.92	285.29	2,440.45	218.69	-736.47	764.67	1.17	1.04	-1.21
2,687.00	26.30	283.48	2,525.39	229.27	-777.68	806.83	1.07	-0.65	-1.91
2,781.00	26.02	283.94	2,609.76	239.09	-817.94	847.83	0.37	-0.30	0.49
2,876.00	25.15	283.76	2,695.45	248.91	-857.78	888.44	0.92	-0.92	-0.19
2,970.00	24.94	283.66	2,780.61	258.34	-896.44	927.81	0.23	-0.22	-0.11
3,065.00	24.78	284.61	2,866.81	268.09	-935.16	967.36	0.45	-0.17	1.00
3,159.00	25.02	281.85	2,952.07	277.14	-973.68	1,006.46	1.26	0.26	-2.94
3,254.00	24.34	282.37	3,038.39	285.46	-1,012.47	1,045.52	0.75	-0.72	0.55
3,348.00	24.69	279.07	3,123.92	292.71	-1,050.78	1,083.75	1.50	0.37	-3.51
3,443.00	23.75	278.45	3,210.56	298.65	-1,089.29	1,121.67	1.03	-0.99	-0.65
3,537.00	25.66	279.68	3,295.95	304.85	-1,128.08	1,159.95	2.10	2.03	1.31
3,632.00	24.93	279.36	3,381.84	311.57	-1,168.11	1,199.57	0.78	-0.77	-0.34
3,727.00	24.75	279.60	3,468.06	318.14	-1,207.48	1,238.52	0.22	-0.19	0.25
3,822.00	24.72	280.07	3,554.34	324.93	-1,246.64	1,277.36	0.21	-0.03	0.49
3,917.00	23.61	279.83	3,641.01	331.65	-1,284.95	1,315.39	1.17	-1.17	-0.25
4,012.00	24.69	285.73	3,727.71	340.28	-1,322.80	1,353.70	2.78	1.14	6.21
4,106.00	24.49	286.46	3,813.19	351.12	-1,360.38	1,392.60	0.39	-0.21	0.78

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Well:	PA 342-26	North Reference:	True
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Design:	OH	Database:	Grand Junction District

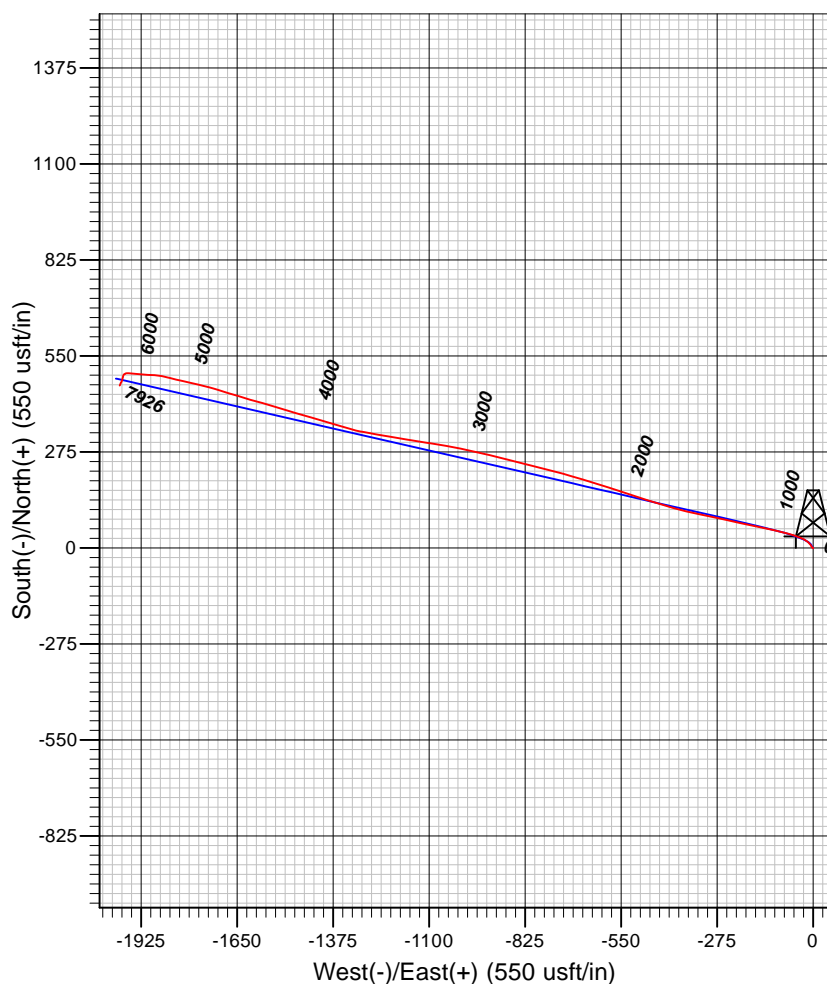
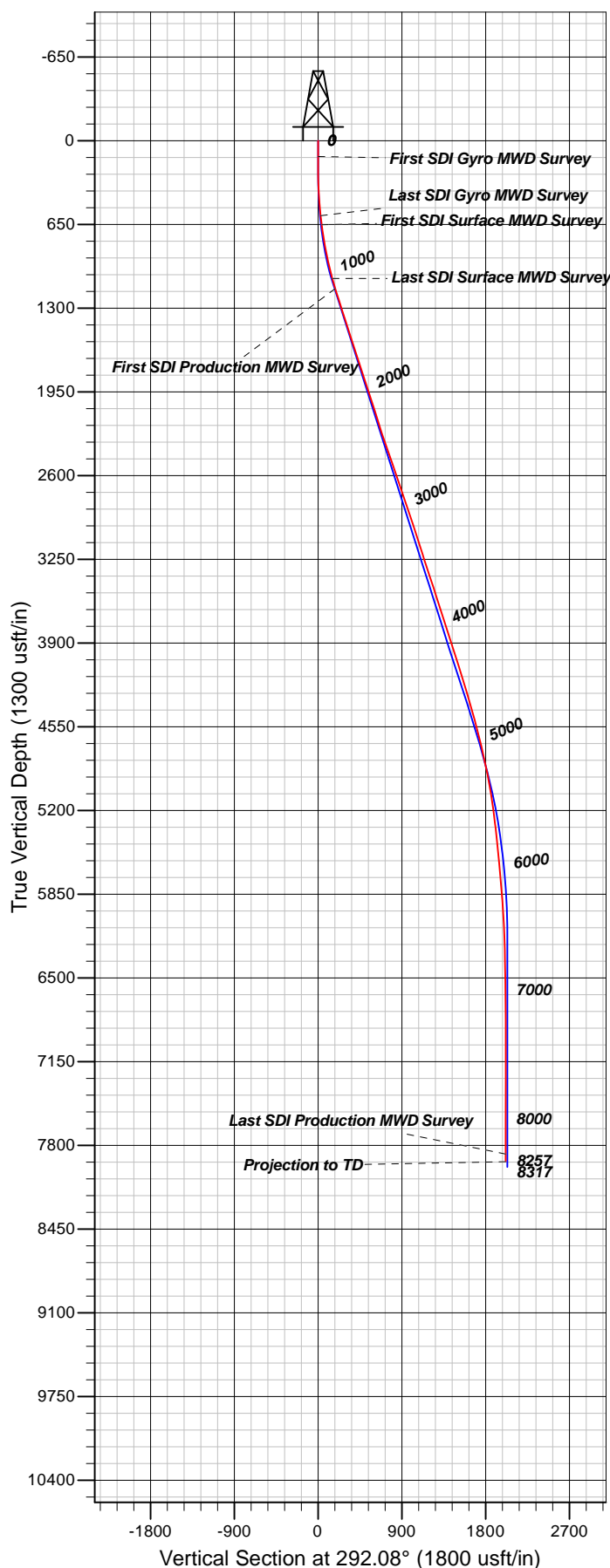
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,201.00	24.36	286.43	3,899.68	362.24	-1,398.05	1,431.70	0.14	-0.14	-0.03
4,296.00	23.43	285.67	3,986.54	372.89	-1,435.03	1,469.97	1.03	-0.98	-0.80
4,423.00	23.57	286.69	4,103.01	387.00	-1,483.67	1,520.34	0.34	0.11	0.80
4,486.00	22.77	287.54	4,160.93	394.29	-1,507.36	1,545.03	1.38	-1.27	1.35
4,581.00	23.08	286.37	4,248.42	405.08	-1,542.75	1,581.89	0.58	0.33	-1.23
4,675.00	22.34	286.17	4,335.13	415.25	-1,577.59	1,617.99	0.79	-0.79	-0.21
4,770.00	21.43	286.03	4,423.29	425.07	-1,611.61	1,653.21	0.96	-0.96	-0.15
4,856.55	20.56	286.74	4,504.09	433.81	-1,641.36	1,684.07	1.04	-1.00	0.82
PA 342-26 MVRD									
4,865.00	20.48	286.81	4,512.00	434.67	-1,644.20	1,687.02	1.04	-1.00	0.85
4,960.00	19.89	286.78	4,601.17	444.14	-1,675.58	1,719.66	0.62	-0.62	-0.03
5,055.00	18.91	287.22	4,690.77	453.36	-1,705.76	1,751.09	1.04	-1.03	0.46
5,149.00	16.88	284.15	4,780.22	461.21	-1,733.54	1,779.79	2.38	-2.16	-3.27
5,244.00	15.74	282.92	4,871.40	467.46	-1,759.48	1,806.17	1.25	-1.20	-1.29
5,339.00	14.35	283.36	4,963.14	473.06	-1,783.49	1,830.53	1.47	-1.46	0.46
5,434.00	12.32	282.57	5,055.57	477.99	-1,804.84	1,852.16	2.15	-2.14	-0.83
5,528.00	11.87	283.97	5,147.49	482.50	-1,824.01	1,871.62	0.57	-0.48	1.49
5,623.00	10.28	283.20	5,240.71	486.80	-1,841.75	1,889.67	1.68	-1.67	-0.81
5,718.00	9.22	285.25	5,334.34	490.74	-1,857.34	1,905.61	1.17	-1.12	2.16
5,813.00	9.04	276.36	5,428.14	493.57	-1,872.10	1,920.35	1.50	-0.19	-9.36
5,907.00	8.48	276.38	5,521.05	495.15	-1,886.33	1,934.13	0.60	-0.60	0.02
6,002.00	7.30	272.28	5,615.15	496.17	-1,899.32	1,946.55	1.38	-1.24	-4.32
6,096.00	6.54	270.17	5,708.46	496.43	-1,910.64	1,957.14	0.85	-0.81	-2.24
6,191.00	6.74	273.71	5,802.82	496.80	-1,921.62	1,967.45	0.48	0.21	3.73
6,286.00	6.54	276.24	5,897.19	497.75	-1,932.56	1,977.94	0.37	-0.21	2.66
6,380.00	5.56	276.87	5,990.66	498.88	-1,942.40	1,987.49	1.04	-1.04	0.67
6,475.00	5.35	277.53	6,085.23	500.01	-1,951.36	1,996.22	0.23	-0.22	0.69
6,569.00	2.20	268.12	6,179.02	500.52	-1,957.51	2,002.11	3.40	-3.35	-10.01
6,664.00	1.75	276.46	6,273.96	500.63	-1,960.77	2,005.17	0.56	-0.47	8.78
6,758.00	1.58	262.61	6,367.92	500.62	-1,963.49	2,007.68	0.46	-0.18	-14.73
6,853.00	1.45	272.20	6,462.89	500.50	-1,965.98	2,009.95	0.30	-0.14	10.09
6,947.00	1.28	250.63	6,556.86	500.20	-1,968.16	2,011.86	0.57	-0.18	-22.95
7,042.00	1.04	235.90	6,651.84	499.36	-1,969.88	2,013.13	0.40	-0.25	-15.51
7,136.00	0.83	250.23	6,745.83	498.65	-1,971.23	2,014.11	0.33	-0.22	15.24
7,231.00	0.87	242.68	6,840.82	498.09	-1,972.51	2,015.10	0.13	0.04	-7.95
7,325.00	0.91	227.06	6,934.81	497.25	-1,973.69	2,015.88	0.26	0.04	-16.62
7,420.00	1.06	201.34	7,029.79	495.92	-1,974.57	2,016.18	0.49	0.16	-27.07
7,514.00	1.32	217.51	7,123.77	494.25	-1,975.54	2,016.46	0.45	0.28	17.20
7,609.00	1.80	198.38	7,218.74	491.97	-1,976.68	2,016.66	0.74	0.51	-20.14
7,703.00	1.54	182.46	7,312.70	489.31	-1,977.20	2,016.14	0.56	-0.28	-16.94
7,798.00	2.09	190.38	7,407.65	486.33	-1,977.57	2,015.36	0.63	0.58	8.34
7,892.00	2.37	196.78	7,501.58	482.78	-1,978.44	2,014.83	0.40	0.30	6.81
7,987.00	2.07	200.37	7,596.51	479.29	-1,979.60	2,014.60	0.35	-0.32	3.78
8,081.00	2.39	203.87	7,690.44	475.91	-1,980.98	2,014.61	0.37	0.34	3.72

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Site:	PA 22-25 Pad	MD Reference:	GL 5224 & RKB 24' @ 5248.00usft
Well:	PA 342-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

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)	
8,175.00	2.96	206.13	7,784.34	471.93	-1,982.85	2,014.84	0.62	0.61	2.40	
8,257.00	2.81	204.96	7,866.23	468.21	-1,984.63	2,015.09	0.20	-0.18	-1.43	
Last SDI Production MWD Survey										
8,317.00	2.81	204.96	7,926.16	465.55	-1,985.87	2,015.24	0.00	0.00	0.00	
Projection to TD - PA 342-26 PBHL - PBHL (PA 342-26)										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
123.00	123.00	-0.37	0.05	First SDI Gyro MWD Survey	
583.00	581.23	21.73	-20.78	Last SDI Gyro MWD Survey	
655.00	652.28	27.23	-31.09	First SDI Surface MWD Survey	
1,088.00	1,069.01	57.46	-141.66	Last SDI Surface MWD Survey	
1,173.00	1,147.80	63.82	-172.92	First SDI Production MWD Survey	
8,257.00	7,866.23	468.21	-1,984.63	Last SDI Production MWD Survey	
8,317.00	7,926.16	465.55	-1,985.87	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____



Well Details: PA 342-26

TVD Reference: GL 5224 & RKB 24' @ 5248.00usft
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.00 0.00 1615199.68 2308748.03 39.4969110 -107.9498354PA 342-26 (B3)

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well PA 342-26 - Slot PA 342-26 (B3), True North
 Vertical (TVD) Reference: GL 5224 & RKB 24' @ 5248.00usft
 Section (VS) Reference: Slot - PA 342-26 (B3)(0.00N, 0.00E)
 Measured Depth Reference: GL 5224 & RKB 24' @ 5248.00usft
 Calculation Method: Minimum Curvature

PROJECT DETAILS: Garfield County, CO NAD83

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Central Zone

System Datum: Mean Sea Level

Plan: OH

11:35, December 04 2017
 Created By: Mel Mireles Jr.