

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
GM 543-8 BTV	4778.00	-1039.75	2389.97	1598736	132259052.65	39.4479189	-108.1241789	Circle (Radius: 50.00)
- plan misses target center by 42.87usft at 5505.38usft MD (4784.69 TVD, -1022.86 N, 2351.13 E)								
GM 543-8 PBHL	6671.00	-1039.75	2389.97	1598736	132259052.65	39.4479189	-108.1241789	Point
- plan misses target center by 0.01usft at 7394.13usft MD (6671.00 TVD, -1039.75 N, 2389.97 E)								



## **TEP Rocky Mountain LLC**

**Garfield County, CO NAD83**

**GV 1-8 Pad**

**GM 543-8 - Slot GM 543-8 (A7)**

**OH**

**Plan: Plan #3 12Nov2018 mmsdi**

## **Standard Planning Report**

**13 November, 2018**



<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well GM 543-8 - Slot GM 543-8 (A7)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6280'; & RKB 24' @ 6304.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6280'; & RKB 24' @ 6304.00usft
<b>Site:</b>	GV 1-8 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 543-8	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #3 12Nov2018 mmsdi		

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

Site		GV 1-8 Pad			
Site Position:		Northing:	1,599,836.41 usft	Latitude:	39.4507498
From:	Map	Easting:	2,256,677.81 usft	Longitude:	-108.1326980
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.66 °

Well	GM 543-8 - Slot GM 543-8 (A7)					
Well Position	+N/-S	8.74 usft	Northing:	1,599,844.69 usft	Latitude:	39.4507738
	+E/-W	15.75 usft	Easting:	2,256,693.81 usft	Longitude:	-108.1326422
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,280.00 usft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	6/21/2018	9.52	65.68	51,679

<b>Design</b>	Plan #3 12Nov2018 mmsdi			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	113.51

<b>Plan Sections</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00	
975.40	34.22	113.51	925.46	-98.90	227.33	4.00	4.00	0.00	113.51	
4,287.80	34.22	113.51	3,664.55	-841.95	1,935.31	0.00	0.00	0.00	0.00	
5,498.59	10.00	113.51	4,778.00	-1,022.39	2,350.06	2.00	-2.00	0.00	180.00	
5,998.59	0.00	0.00	5,275.47	-1,039.75	2,389.97	2.00	-2.00	-22.70	-180.00	
7,394.13	0.00	0.00	6,671.00	-1,039.75	2,389.97	0.00	0.00	0.00	0.00	GM 543-8 PBHL

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well GM 543-8 - Slot GM 543-8 (A7)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6280'; & RKB 24' @ 6304.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6280'; & RKB 24' @ 6304.00usft
<b>Site:</b>	GV 1-8 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 543-8	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #3 12Nov2018 mmsdi		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
120.00	0.00	0.00	120.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 4.00</b>									
200.00	3.20	113.51	199.96	-0.89	2.05	2.23	4.00	4.00	0.00
300.00	7.20	113.51	299.53	-4.51	10.36	11.29	4.00	4.00	0.00
400.00	11.20	113.51	398.22	-10.88	25.01	27.28	4.00	4.00	0.00
500.00	15.20	113.51	495.56	-19.99	45.95	50.11	4.00	4.00	0.00
600.00	19.20	113.51	591.07	-31.78	73.06	79.67	4.00	4.00	0.00
700.00	23.20	113.51	684.28	-46.21	106.21	115.83	4.00	4.00	0.00
800.00	27.20	113.51	774.74	-63.19	145.25	158.40	4.00	4.00	0.00
900.00	31.20	113.51	862.02	-82.65	189.98	207.18	4.00	4.00	0.00
975.40	34.22	113.51	925.46	-98.90	227.33	247.91	4.00	4.00	0.00
<b>Start 3312.40 hold at 975.40 MD</b>									
1,000.00	34.22	113.51	945.80	-104.42	240.02	261.75	0.00	0.00	0.00
<b>9 5/8" Casing @ 1000' MD</b>									
1,100.00	34.22	113.51	1,028.49	-126.85	291.58	317.98	0.00	0.00	0.00
1,200.00	34.22	113.51	1,111.18	-149.28	343.14	374.21	0.00	0.00	0.00
1,300.00	34.22	113.51	1,193.88	-171.72	394.71	430.44	0.00	0.00	0.00
1,400.00	34.22	113.51	1,276.57	-194.15	446.27	486.67	0.00	0.00	0.00
1,500.00	34.22	113.51	1,359.26	-216.58	497.83	542.90	0.00	0.00	0.00
1,600.00	34.22	113.51	1,441.95	-239.01	549.40	599.13	0.00	0.00	0.00
1,700.00	34.22	113.51	1,524.65	-261.45	600.96	655.37	0.00	0.00	0.00
1,800.00	34.22	113.51	1,607.34	-283.88	652.52	711.60	0.00	0.00	0.00
1,900.00	34.22	113.51	1,690.03	-306.31	704.08	767.83	0.00	0.00	0.00
2,000.00	34.22	113.51	1,772.72	-328.74	755.65	824.06	0.00	0.00	0.00
2,100.00	34.22	113.51	1,855.41	-351.18	807.21	880.29	0.00	0.00	0.00
2,200.00	34.22	113.51	1,938.11	-373.61	858.77	936.52	0.00	0.00	0.00
2,300.00	34.22	113.51	2,020.80	-396.04	910.34	992.75	0.00	0.00	0.00
2,377.64	34.22	113.51	2,085.00	-413.46	950.37	1,036.41	0.00	0.00	0.00
<b>GSAND</b>									
2,400.00	34.22	113.51	2,103.49	-418.47	961.90	1,048.99	0.00	0.00	0.00
2,500.00	34.22	113.51	2,186.18	-440.91	1,013.46	1,105.22	0.00	0.00	0.00
2,504.61	34.22	113.51	2,190.00	-441.94	1,015.84	1,107.81	0.00	0.00	0.00
<b>GSAND BASE</b>									
2,600.00	34.22	113.51	2,268.88	-463.34	1,065.03	1,161.45	0.00	0.00	0.00
2,700.00	34.22	113.51	2,351.57	-485.77	1,116.59	1,217.68	0.00	0.00	0.00
2,800.00	34.22	113.51	2,434.26	-508.20	1,168.15	1,273.91	0.00	0.00	0.00
2,900.00	34.22	113.51	2,516.95	-530.64	1,219.72	1,330.14	0.00	0.00	0.00
2,921.82	34.22	113.51	2,535.00	-535.53	1,230.97	1,342.41	0.00	0.00	0.00
<b>FRUN</b>									
3,000.00	34.22	113.51	2,599.65	-553.07	1,271.28	1,386.37	0.00	0.00	0.00
3,100.00	34.22	113.51	2,682.34	-575.50	1,322.84	1,442.61	0.00	0.00	0.00
3,200.00	34.22	113.51	2,765.03	-597.93	1,374.40	1,498.84	0.00	0.00	0.00
3,300.00	34.22	113.51	2,847.72	-620.37	1,425.97	1,555.07	0.00	0.00	0.00
3,400.00	34.22	113.51	2,930.42	-642.80	1,477.53	1,611.30	0.00	0.00	0.00
3,500.00	34.22	113.51	3,013.11	-665.23	1,529.09	1,667.53	0.00	0.00	0.00
3,600.00	34.22	113.51	3,095.80	-687.66	1,580.66	1,723.76	0.00	0.00	0.00
3,700.00	34.22	113.51	3,178.49	-710.10	1,632.22	1,779.99	0.00	0.00	0.00
3,800.00	34.22	113.51	3,261.19	-732.53	1,683.78	1,836.23	0.00	0.00	0.00
3,900.00	34.22	113.51	3,343.88	-754.96	1,735.35	1,892.46	0.00	0.00	0.00
4,000.00	34.22	113.51	3,426.57	-777.39	1,786.91	1,948.69	0.00	0.00	0.00
4,100.00	34.22	113.51	3,509.26	-799.82	1,838.47	2,004.92	0.00	0.00	0.00

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well GM 543-8 - Slot GM 543-8 (A7)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6280'; & RKB 24' @ 6304.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6280'; & RKB 24' @ 6304.00usft
<b>Site:</b>	GV 1-8 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 543-8	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #3 12Nov2018 mmsdi		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,200.00	34.22	113.51	3,591.95	-822.26	1,890.04	2,061.15	0.00	0.00	0.00	
4,231.50	34.22	113.51	3,618.00	-829.32	1,906.28	2,078.86	0.00	0.00	0.00	
OCRK - MVRD										
4,287.80	34.22	113.51	3,664.55	-841.95	1,935.31	2,110.52	0.00	0.00	0.00	
Start Drop -2.00										
4,300.00	33.97	113.51	3,674.66	-844.68	1,941.58	2,117.36	2.00	-2.00	0.00	
4,400.00	31.97	113.51	3,758.55	-866.39	1,991.48	2,171.78	2.00	-2.00	0.00	
4,500.00	29.97	113.51	3,844.29	-886.92	2,038.67	2,223.24	2.00	-2.00	0.00	
4,600.00	27.97	113.51	3,931.77	-906.24	2,083.08	2,271.68	2.00	-2.00	0.00	
4,700.00	25.97	113.51	4,020.89	-924.33	2,124.67	2,317.03	2.00	-2.00	0.00	
4,800.00	23.97	113.51	4,111.54	-941.18	2,163.38	2,359.24	2.00	-2.00	0.00	
4,900.00	21.97	113.51	4,203.60	-956.74	2,199.17	2,398.27	2.00	-2.00	0.00	
5,000.00	19.97	113.51	4,296.97	-971.02	2,231.99	2,434.06	2.00	-2.00	0.00	
5,100.00	17.97	113.51	4,391.53	-983.99	2,261.80	2,466.57	2.00	-2.00	0.00	
5,200.00	15.97	113.51	4,487.17	-995.63	2,288.56	2,495.76	2.00	-2.00	0.00	
5,300.00	13.97	113.51	4,583.77	-1,005.94	2,312.25	2,521.59	2.00	-2.00	0.00	
5,400.00	11.97	113.51	4,681.22	-1,014.89	2,332.83	2,544.04	2.00	-2.00	0.00	
5,498.59	10.00	113.51	4,778.00	-1,022.39	2,350.06	2,562.82	2.00	-2.00	0.00	
Start DLS 2.00 TFO -180.00 - KMGAS										
5,500.00	9.97	113.51	4,779.39	-1,022.49	2,350.28	2,563.07	2.00	-2.00	0.00	
5,505.38	9.86	113.51	4,784.69	-1,022.86	2,351.13	2,563.99	2.00	-2.00	0.00	
GM 543-8 BTV										
5,600.00	7.97	113.51	4,878.16	-1,028.71	2,364.58	2,578.66	2.00	-2.00	0.00	
5,700.00	5.97	113.51	4,977.41	-1,033.55	2,375.71	2,590.80	2.00	-2.00	0.00	
5,800.00	3.97	113.51	5,077.03	-1,037.01	2,383.66	2,599.47	2.00	-2.00	0.00	
5,900.00	1.97	113.51	5,176.89	-1,039.08	2,388.41	2,604.65	2.00	-2.00	0.00	
5,998.59	0.00	0.00	5,275.47	-1,039.75	2,389.97	2,606.35	2.00	-2.00	-115.13	
Start 1395.53 hold at 5998.59 MD										
6,000.00	0.00	0.00	5,276.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
6,100.00	0.00	0.00	5,376.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
6,200.00	0.00	0.00	5,476.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
6,300.00	0.00	0.00	5,576.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
6,400.00	0.00	0.00	5,676.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
6,500.00	0.00	0.00	5,776.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
6,600.00	0.00	0.00	5,876.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
6,700.00	0.00	0.00	5,976.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
6,780.13	0.00	0.00	6,057.00	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
CMEO										
6,800.00	0.00	0.00	6,076.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
6,900.00	0.00	0.00	6,176.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
7,000.00	0.00	0.00	6,276.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
7,100.00	0.00	0.00	6,376.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
7,200.00	0.00	0.00	6,476.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
7,244.13	0.00	0.00	6,521.00	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
RLNS										
7,300.00	0.00	0.00	6,576.87	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
7,394.13	0.00	0.00	6,671.00	-1,039.75	2,389.97	2,606.35	0.00	0.00	0.00	
TD at 7394.13 - TD - GM 543-8 PBHL										

<b>Database:</b>	Grand Junction District	<b>Local Co-ordinate Reference:</b>	Well GM 543-8 - Slot GM 543-8 (A7)
<b>Company:</b>	TEP Rocky Mountain LLC	<b>TVD Reference:</b>	GL 6280'; & RKB 24' @ 6304.00usft
<b>Project:</b>	Garfield County, CO NAD83	<b>MD Reference:</b>	GL 6280'; & RKB 24' @ 6304.00usft
<b>Site:</b>	GV 1-8 Pad	<b>North Reference:</b>	True
<b>Well:</b>	GM 543-8	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #3 12Nov2018 mmsdi		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
GM 543-8 BTV	0.00	0.00	4,778.00	-1,039.75	2,389.97	1,598,736.13	2,259,052.65	39.4479189	-108.1241789
- plan misses target center by 42.87usft at 5505.38usft MD (4784.69 TVD, -1022.86 N, 2351.13 E)									
- Circle (radius 50.00)									
GM 543-8 PBHL	0.00	0.00	6,671.00	-1,039.75	2,389.97	1,598,736.13	2,259,052.65	39.4479189	-108.1241789
- plan misses target center by 0.01usft at 7394.13usft MD (6671.00 TVD, -1039.75 N, 2389.97 E)									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(usft)	(usft)		(in)	(in)
1,000.00	945.80	9 5/8" Casing @ 1000' MD	9.62	13.50

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(usft)	(usft)			(°)	(°)
2,377.64	2,085.00	GSAND		0.00	0.00
2,504.61	2,190.00	GSAND BASE		0.00	0.00
2,921.82	2,535.00	FRUN		0.00	0.00
4,231.50	3,618.00	OCRK		0.00	0.00
4,231.50	3,618.00	MVRD		0.00	0.00
5,498.59	4,778.00	KMVGAS		0.00	0.00
6,780.13	6,057.00	CME0		0.00	0.00
7,244.13	6,521.00	RLNS		0.00	0.00
7,394.13	6,671.00	TD		0.00	0.00

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S	+E/-W	
(usft)	(usft)	(usft)	(usft)	
120.00	120.00	0.00	0.00	Start Build 4.00
975.40	925.46	-98.90	227.33	Start 3312.40 hold at 975.40 MD
4,287.80	3,664.55	-841.95	1,935.31	Start Drop -2.00
5,498.59	4,778.00	-1,022.39	2,350.06	Start DLS 2.00 TFO -180.00
5,998.59	5,275.47	-1,039.75	2,389.97	Start 1395.53 hold at 5998.59 MD
7,394.13	6,671.00	-1,039.75	2,389.97	TD at 7394.13