

CRESTONE PEAK RESOURCES

ARAPAHOE COUNTY

SEC 8-T5S-R64W

STATE HARVARD 5-64 8-7-12 1BH

OWB

Plan: PROPOSAL 1

Standard Planning Report

15 May, 2025

Project: ARAPAHOE COUNTY
 Site: SEC 8-T5S-R64W
 Well: STATE HARVARD 5-64 8-7-12 1BH
 Wellbore: OWB
 Design: PROPOSAL 1



Azimuths to True North
 Magnetic North: 7.28°

Magnetic Field
 Strength: 51163.8nT
 Dip Angle: 65.91°
 Date: 3/20/2025
 Model: IGRF2020

WELL DETAILS: STATE HARVARD 5-64 8-7-12 1BH

+N/-S	+E/-W	Northing	Easting	5923.00 Latitude	Longitude	Slot
0.00	0.00	1655837.39	3262054.84	39.630383°N	104.569595°W	

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	V Sect	Departure	Annotation
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	Start Build 2.00
1085.20	19.70	34.09	1065.89	138.92	94.01	-74.96	167.74	Start 6462.48 hold at 1085.20 MD
7547.68	19.70	34.09	7149.98	1943.48	1315.15	-1048.68	2346.64	Start DLS 10.00 TFO -128.85
8574.29	90.00	263.54	7824.00	2062.85	739.04	-461.88	3001.50	Start 5157.66 hold at 8574.29 MD
13731.94	90.00	263.54	7824.00	1482.58	-4385.88	4542.53	8159.16	Start DLS 2.00 TFO 90.00
14111.13	90.00	271.12	7824.00	1464.94	-4764.37	4915.44	8538.35	Start 7397.29 hold at 14111.13 MD
21508.42	90.00	271.12	7824.00	1610.03	-12160.24	12266.36	15935.64	TD at 21508.42

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	
3	1085.20	19.70	34.09	1065.89	138.92	94.01	2.00	34.09	-74.96	LP-ST. HARVARD 5-64 8-7-12 1BH
4	7547.68	19.70	34.09	7149.98	1943.48	1315.15	0.00	0.00	-1048.68	MID PNT-ST. HARVARD 5-64 8-7-12 1B
5	8574.29	90.00	263.54	7824.00	2062.85	739.04	10.00	-128.85	-461.88	LP-ST. HARVARD 5-64 8-7-12 1BH - plan hits target center
6	13731.94	90.00	263.54	7824.00	1482.58	-4385.88	0.00	0.00	4542.53	MID PNT-ST. HARVARD 5-64 8-7-12 1B - plan hits target center
7	14111.13	90.00	271.12	7824.00	1464.94	-4764.37	2.00	90.00	4915.44	PBHL-ST. HARVARD 5-64 8-7-12 1BH - plan hits target center
8	21508.42	90.00	271.12	7824.00	1610.03	-12160.24	0.00	0.00	12266.36	PBHL-ST. HARVARD 5-64 8-7-12 1BH - plan hits target center

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
LP-ST. HARVARD 5-64 8-7-12 1BH	7824.00	2062.85	739.04	1657907.65	3262772.70	39.636046°N	104.566971°W	Point
MID PNT-ST. HARVARD 5-64 8-7-12 1B - plan hits target center	7824.00	1482.58	-4385.88	1657274.94	3257654.11	39.634452°N	104.585167°W	Point
PBHL-ST. HARVARD 5-64 8-7-12 1BH - plan hits target center	7824.00	1610.03	-12160.24	1657322.77	3249879.01	39.634795°N	104.612770°W	Point

PROJECT DETAILS: ARAPAHOE COUNTY

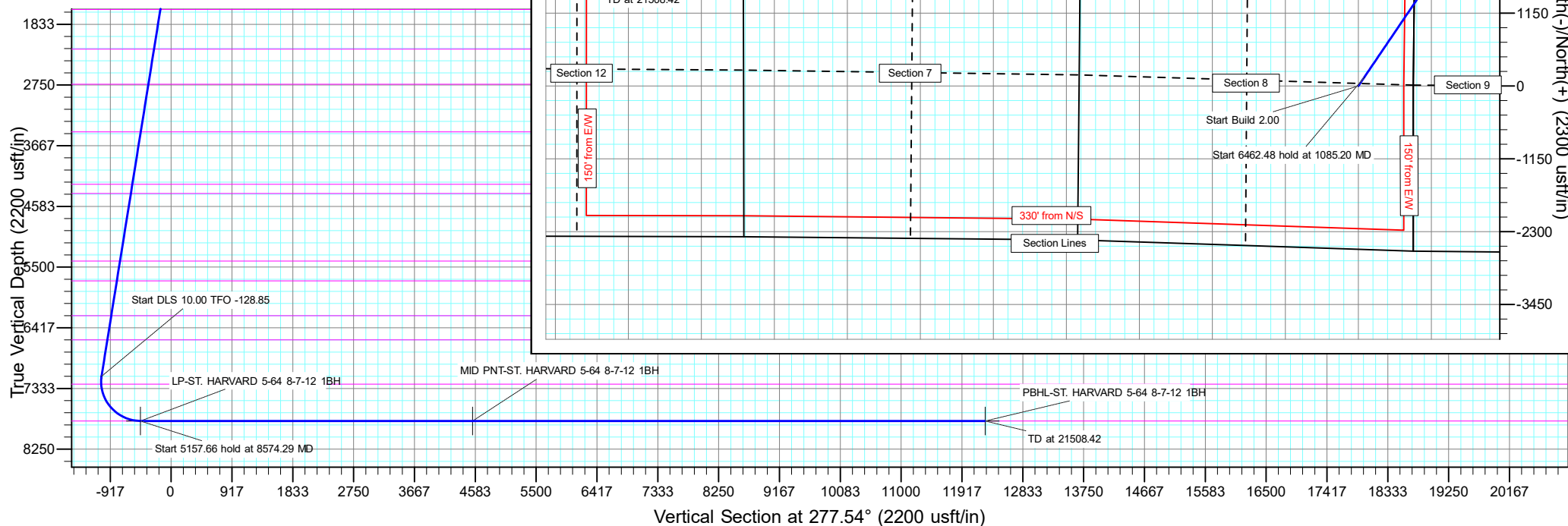
Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Central Zone

System Datum: Mean Sea Level

SHL:
 2577' FSL, 867' FEL
 SEC 8-T5S-R64W

LP:
 640' FNL, 150' FEL
 SEC 8-T5S-R64W

BHL:
 1300' FNL, 2473' FEL
 SEC 12-T5S-R65W



Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 1BH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KBE 25' @ 5948.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5948.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 1BH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Project ARAPAHOE COUNTY			
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

Site SEC 8-T5S-R64W			
Site Position:		Northing:	1,658,546.66 usft
From:	Lat/Long	Easting:	3,262,923.29 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in
		Latitude:	39.637796°N
		Longitude:	104.566413°W
		Grid Convergence:	0.59 °

Well STATE HARVARD 5-64 8-7-12 1BH			
Well Position	+N/-S	-2,700.26 usft	Northing: 1,655,837.38 usft
	+E/-W	-896.27 usft	Easting: 3,262,054.84 usft
Position Uncertainty		0.00 usft	Wellhead Elevation:
			Latitude: 39.630383°N
			Longitude: 104.569595°W
			Ground Level: 5,923.00 usft

Wellbore OWB					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	3/20/2025	7.28	65.91	51,163.75842877

Design PROPOSAL 1				
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	277.54

Plan Survey Tool Program		Date	5/15/2025		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	21,508.42	PROPOSAL 1 (OWB)	MWD OWSG	
				OWSG MWD - Standard	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	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	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,085.20	19.70	34.09	1,065.89	138.92	94.01	2.00	2.00	0.00	34.09	
7,547.68	19.70	34.09	7,149.98	1,943.48	1,315.15	0.00	0.00	0.00	0.00	
8,574.29	90.00	263.54	7,824.00	2,062.85	739.04	10.00	6.85	-12.72	-128.85	LP-ST. HARVARD 5-64
13,731.94	90.00	263.54	7,824.00	1,482.58	-4,385.88	0.00	0.00	0.00	0.00	MID PNT-ST. HARVA
14,111.13	90.00	271.12	7,824.00	1,464.94	-4,764.37	2.00	0.00	2.00	90.00	
21,508.42	90.00	271.12	7,824.00	1,610.03	-12,160.24	0.00	0.00	0.00	0.00	PBHL-ST. HARVARD

Civitas Resources

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Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5948.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 1BH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	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	0.00
24.00	0.00	0.00	24.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Denver										
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00										
200.00	2.00	34.09	199.98	1.45	0.98	-0.78	2.00	2.00	0.00	0.00
300.00	4.00	34.09	299.84	5.78	3.91	-3.12	2.00	2.00	0.00	0.00
400.00	6.00	34.09	399.45	13.00	8.80	-7.01	2.00	2.00	0.00	0.00
500.00	8.00	34.09	498.70	23.09	15.63	-12.46	2.00	2.00	0.00	0.00
600.00	10.00	34.09	597.47	36.05	24.39	-19.45	2.00	2.00	0.00	0.00
700.00	12.00	34.09	695.62	51.85	35.08	-27.98	2.00	2.00	0.00	0.00
800.00	14.00	34.09	793.06	70.48	47.69	-38.03	2.00	2.00	0.00	0.00
900.00	16.00	34.09	889.64	91.91	62.20	-49.59	2.00	2.00	0.00	0.00
1,000.00	18.00	34.09	985.27	116.12	78.58	-62.66	2.00	2.00	0.00	0.00
1,085.20	19.70	34.09	1,065.89	138.92	94.01	-74.96	2.00	2.00	0.00	0.00
Start 6462.48 hold at 1085.20 MD										
1,100.00	19.70	34.09	1,079.83	143.06	96.81	-77.19	0.00	0.00	0.00	0.00
1,130.99	19.70	34.09	1,109.00	151.71	102.66	-81.86	0.00	0.00	0.00	0.00
Arapahoe										
1,200.00	19.70	34.09	1,173.97	170.98	115.70	-92.26	0.00	0.00	0.00	0.00
1,300.00	19.70	34.09	1,268.12	198.90	134.60	-107.33	0.00	0.00	0.00	0.00
1,400.00	19.70	34.09	1,362.26	226.83	153.49	-122.39	0.00	0.00	0.00	0.00
1,500.00	19.70	34.09	1,456.41	254.75	172.39	-137.46	0.00	0.00	0.00	0.00
1,600.00	19.70	34.09	1,550.55	282.67	191.29	-152.53	0.00	0.00	0.00	0.00
1,662.08	19.70	34.09	1,609.00	300.01	203.02	-161.88	0.00	0.00	0.00	0.00
Laramie-Fox Hills Formation										
1,700.00	19.70	34.09	1,644.70	310.60	210.18	-167.59	0.00	0.00	0.00	0.00
1,800.00	19.70	34.09	1,738.84	338.52	229.08	-182.66	0.00	0.00	0.00	0.00
1,900.00	19.70	34.09	1,832.99	366.44	247.97	-197.73	0.00	0.00	0.00	0.00
2,000.00	19.70	34.09	1,927.13	394.37	266.87	-212.80	0.00	0.00	0.00	0.00
2,100.00	19.70	34.09	2,021.28	422.29	285.76	-227.86	0.00	0.00	0.00	0.00
2,200.00	19.70	34.09	2,115.42	450.22	304.66	-242.93	0.00	0.00	0.00	0.00
2,299.40	19.70	34.09	2,209.00	477.97	323.44	-257.91	0.00	0.00	0.00	0.00
Pierre Formation										
2,300.00	19.70	34.09	2,209.56	478.14	323.56	-258.00	0.00	0.00	0.00	0.00
2,400.00	19.70	34.09	2,303.71	506.06	342.45	-273.07	0.00	0.00	0.00	0.00
2,500.00	19.70	34.09	2,397.85	533.99	361.35	-288.13	0.00	0.00	0.00	0.00
2,600.00	19.70	34.09	2,492.00	561.91	380.24	-303.20	0.00	0.00	0.00	0.00
2,700.00	19.70	34.09	2,586.14	589.83	399.14	-318.27	0.00	0.00	0.00	0.00
2,800.00	19.70	34.09	2,680.29	617.76	418.04	-333.33	0.00	0.00	0.00	0.00
2,862.36	19.70	34.09	2,739.00	635.17	429.82	-342.73	0.00	0.00	0.00	0.00
Upper Pierre aquifer										
2,900.00	19.70	34.09	2,774.43	645.68	436.93	-348.40	0.00	0.00	0.00	0.00
3,000.00	19.70	34.09	2,868.58	673.60	455.83	-363.47	0.00	0.00	0.00	0.00
3,100.00	19.70	34.09	2,962.72	701.53	474.72	-378.54	0.00	0.00	0.00	0.00
3,200.00	19.70	34.09	3,056.87	729.45	493.62	-393.60	0.00	0.00	0.00	0.00
3,300.00	19.70	34.09	3,151.01	757.37	512.51	-408.67	0.00	0.00	0.00	0.00
3,400.00	19.70	34.09	3,245.16	785.30	531.41	-423.74	0.00	0.00	0.00	0.00
3,500.00	19.70	34.09	3,339.30	813.22	550.31	-438.81	0.00	0.00	0.00	0.00
3,600.00	19.70	34.09	3,433.45	841.14	569.20	-453.87	0.00	0.00	0.00	0.00
3,627.14	19.70	34.09	3,459.00	848.72	574.33	-457.96	0.00	0.00	0.00	0.00
Base of Upper Pierre aquifer										
3,700.00	19.70	34.09	3,527.59	869.07	588.10	-468.94	0.00	0.00	0.00	0.00

Civitas Resources

Planning Report

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Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KBE 25' @ 5948.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5948.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 1BH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,800.00	19.70	34.09	3,621.74	896.99	606.99	-484.01	0.00	0.00	0.00
3,900.00	19.70	34.09	3,715.88	924.92	625.89	-499.07	0.00	0.00	0.00
4,000.00	19.70	34.09	3,810.02	952.84	644.79	-514.14	0.00	0.00	0.00
4,100.00	19.70	34.09	3,904.17	980.76	663.68	-529.21	0.00	0.00	0.00
4,200.00	19.70	34.09	3,998.31	1,008.69	682.58	-544.28	0.00	0.00	0.00
4,300.00	19.70	34.09	4,092.46	1,036.61	701.47	-559.34	0.00	0.00	0.00
4,400.00	19.70	34.09	4,186.60	1,064.53	720.37	-574.41	0.00	0.00	0.00
4,466.28	19.70	34.09	4,249.00	1,083.04	732.89	-584.40	0.00	0.00	0.00
Larimer ("Parkman") sandstone									
4,500.00	19.70	34.09	4,280.75	1,092.46	739.26	-589.48	0.00	0.00	0.00
4,600.00	19.70	34.09	4,374.89	1,120.38	758.16	-604.54	0.00	0.00	0.00
4,614.98	19.70	34.09	4,389.00	1,124.56	760.99	-606.80	0.00	0.00	0.00
Pierre Formation									
4,700.00	19.70	34.09	4,469.04	1,148.30	777.06	-619.61	0.00	0.00	0.00
4,800.00	19.70	34.09	4,563.18	1,176.23	795.95	-634.68	0.00	0.00	0.00
4,900.00	19.70	34.09	4,657.33	1,204.15	814.85	-649.75	0.00	0.00	0.00
5,000.00	19.70	34.09	4,751.47	1,232.07	833.74	-664.81	0.00	0.00	0.00
5,100.00	19.70	34.09	4,845.62	1,260.00	852.64	-679.88	0.00	0.00	0.00
5,200.00	19.70	34.09	4,939.76	1,287.92	871.54	-694.95	0.00	0.00	0.00
5,300.00	19.70	34.09	5,033.91	1,315.85	890.43	-710.02	0.00	0.00	0.00
5,400.00	19.70	34.09	5,128.05	1,343.77	909.33	-725.08	0.00	0.00	0.00
5,500.00	19.70	34.09	5,222.19	1,371.69	928.22	-740.15	0.00	0.00	0.00
5,600.00	19.70	34.09	5,316.34	1,399.62	947.12	-755.22	0.00	0.00	0.00
5,698.42	19.70	34.09	5,409.00	1,427.10	965.72	-770.05	0.00	0.00	0.00
Terry ("Sussex") sandstone									
5,700.00	19.70	34.09	5,410.48	1,427.54	966.01	-770.28	0.00	0.00	0.00
5,800.00	19.70	34.09	5,504.63	1,455.46	984.91	-785.35	0.00	0.00	0.00
5,900.00	19.70	34.09	5,598.77	1,483.39	1,003.81	-800.42	0.00	0.00	0.00
6,000.00	19.70	34.09	5,692.92	1,511.31	1,022.70	-815.49	0.00	0.00	0.00
6,017.08	19.70	34.09	5,709.00	1,516.08	1,025.93	-818.06	0.00	0.00	0.00
Pierre Formation									
6,100.00	19.70	34.09	5,787.06	1,539.23	1,041.60	-830.55	0.00	0.00	0.00
6,200.00	19.70	34.09	5,881.21	1,567.16	1,060.49	-845.62	0.00	0.00	0.00
6,300.00	19.70	34.09	5,975.35	1,595.08	1,079.39	-860.69	0.00	0.00	0.00
6,400.00	19.70	34.09	6,069.50	1,623.00	1,098.29	-875.75	0.00	0.00	0.00
6,500.00	19.70	34.09	6,163.64	1,650.93	1,117.18	-890.82	0.00	0.00	0.00
6,574.73	19.70	34.09	6,234.00	1,671.80	1,131.30	-902.08	0.00	0.00	0.00
Hygiene ("Shannon") sandstone									
6,600.00	19.70	34.09	6,257.79	1,678.85	1,136.08	-905.89	0.00	0.00	0.00
6,700.00	19.70	34.09	6,351.93	1,706.78	1,154.97	-920.96	0.00	0.00	0.00
6,800.00	19.70	34.09	6,446.08	1,734.70	1,173.87	-936.02	0.00	0.00	0.00
6,900.00	19.70	34.09	6,540.22	1,762.62	1,192.76	-951.09	0.00	0.00	0.00
6,962.44	19.70	34.09	6,599.00	1,780.06	1,204.56	-960.50	0.00	0.00	0.00
Pierre Formation									
7,000.00	19.70	34.09	6,634.37	1,790.55	1,211.66	-966.16	0.00	0.00	0.00
7,100.00	19.70	34.09	6,728.51	1,818.47	1,230.56	-981.23	0.00	0.00	0.00
7,200.00	19.70	34.09	6,822.65	1,846.39	1,249.45	-996.29	0.00	0.00	0.00
7,300.00	19.70	34.09	6,916.80	1,874.32	1,268.35	-1,011.36	0.00	0.00	0.00
7,400.00	19.70	34.09	7,010.94	1,902.24	1,287.24	-1,026.43	0.00	0.00	0.00
7,500.00	19.70	34.09	7,105.09	1,930.16	1,306.14	-1,041.49	0.00	0.00	0.00
7,547.68	19.70	34.09	7,149.98	1,943.48	1,315.15	-1,048.68	0.00	0.00	0.00
Start DLS 10.00 TFO -128.85									
7,600.00	16.90	19.95	7,199.67	1,957.94	1,322.69	-1,054.26	10.00	-5.36	-27.03

Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 1BH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KBE 25' @ 5948.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5948.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 1BH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
7,672.06	15.23	354.39	7,269.00	1,977.23	1,325.34	-1,054.35	10.00	-2.33	-35.47	
Sharon Springs Member										
7,700.00	15.43	343.84	7,295.95	1,984.45	1,323.95	-1,052.02	10.00	0.75	-37.77	
7,800.00	19.65	313.20	7,391.48	2,008.80	1,307.95	-1,032.97	10.00	4.21	-30.63	
7,900.00	27.00	295.82	7,483.35	2,030.26	1,275.18	-997.66	10.00	7.35	-17.38	
8,000.00	35.60	285.89	7,568.78	2,048.15	1,226.63	-947.18	10.00	8.59	-9.94	
8,100.00	44.72	279.49	7,645.16	2,061.96	1,163.78	-883.07	10.00	9.12	-6.39	
8,200.00	54.09	274.90	7,710.17	2,071.24	1,088.54	-807.26	10.00	9.38	-4.59	
8,300.00	63.61	271.30	7,761.85	2,075.73	1,003.19	-722.06	10.00	9.52	-3.60	
8,400.00	73.20	268.25	7,798.62	2,075.29	910.33	-630.06	10.00	9.59	-3.05	
8,500.00	82.83	265.50	7,819.36	2,069.93	812.79	-534.06	10.00	9.63	-2.75	
8,574.29	90.00	263.54	7,824.00	2,062.85	739.04	-461.88	10.00	9.65	-2.64	
Start 5157.66 hold at 8574.29 MD - Niobrara Formation										
8,600.00	90.00	263.54	7,824.00	2,059.95	713.49	-436.93	0.00	0.00	0.00	
8,700.00	90.00	263.54	7,824.00	2,048.70	614.12	-339.90	0.00	0.00	0.00	
8,800.00	90.00	263.54	7,824.00	2,037.45	514.76	-242.87	0.00	0.00	0.00	
8,900.00	90.00	263.54	7,824.00	2,026.20	415.39	-145.85	0.00	0.00	0.00	
9,000.00	90.00	263.54	7,824.00	2,014.95	316.03	-48.82	0.00	0.00	0.00	
9,100.00	90.00	263.54	7,824.00	2,003.70	216.66	48.21	0.00	0.00	0.00	
9,200.00	90.00	263.54	7,824.00	1,992.45	117.29	145.24	0.00	0.00	0.00	
9,300.00	90.00	263.54	7,824.00	1,981.20	17.93	242.27	0.00	0.00	0.00	
9,400.00	90.00	263.54	7,824.00	1,969.95	-81.44	339.30	0.00	0.00	0.00	
9,500.00	90.00	263.54	7,824.00	1,958.70	-180.80	436.33	0.00	0.00	0.00	
9,600.00	90.00	263.54	7,824.00	1,947.45	-280.17	533.36	0.00	0.00	0.00	
9,700.00	90.00	263.54	7,824.00	1,936.20	-379.53	630.38	0.00	0.00	0.00	
9,800.00	90.00	263.54	7,824.00	1,924.95	-478.90	727.41	0.00	0.00	0.00	
9,900.00	90.00	263.54	7,824.00	1,913.69	-578.26	824.44	0.00	0.00	0.00	
10,000.00	90.00	263.54	7,824.00	1,902.44	-677.63	921.47	0.00	0.00	0.00	
10,100.00	90.00	263.54	7,824.00	1,891.19	-776.99	1,018.50	0.00	0.00	0.00	
10,200.00	90.00	263.54	7,824.00	1,879.94	-876.36	1,115.53	0.00	0.00	0.00	
10,300.00	90.00	263.54	7,824.00	1,868.69	-975.72	1,212.56	0.00	0.00	0.00	
10,400.00	90.00	263.54	7,824.00	1,857.44	-1,075.09	1,309.59	0.00	0.00	0.00	
10,500.00	90.00	263.54	7,824.00	1,846.19	-1,174.45	1,406.61	0.00	0.00	0.00	
10,600.00	90.00	263.54	7,824.00	1,834.94	-1,273.82	1,503.64	0.00	0.00	0.00	
10,700.00	90.00	263.54	7,824.00	1,823.69	-1,373.18	1,600.67	0.00	0.00	0.00	
10,800.00	90.00	263.54	7,824.00	1,812.44	-1,472.55	1,697.70	0.00	0.00	0.00	
10,900.00	90.00	263.54	7,824.00	1,801.19	-1,571.91	1,794.73	0.00	0.00	0.00	
11,000.00	90.00	263.54	7,824.00	1,789.94	-1,671.28	1,891.76	0.00	0.00	0.00	
11,100.00	90.00	263.54	7,824.00	1,778.69	-1,770.64	1,988.79	0.00	0.00	0.00	
11,200.00	90.00	263.54	7,824.00	1,767.44	-1,870.01	2,085.82	0.00	0.00	0.00	
11,300.00	90.00	263.54	7,824.00	1,756.19	-1,969.37	2,182.84	0.00	0.00	0.00	
11,400.00	90.00	263.54	7,824.00	1,744.93	-2,068.74	2,279.87	0.00	0.00	0.00	
11,500.00	90.00	263.54	7,824.00	1,733.68	-2,168.10	2,376.90	0.00	0.00	0.00	
11,600.00	90.00	263.54	7,824.00	1,722.43	-2,267.47	2,473.93	0.00	0.00	0.00	
11,700.00	90.00	263.54	7,824.00	1,711.18	-2,366.83	2,570.96	0.00	0.00	0.00	
11,800.00	90.00	263.54	7,824.00	1,699.93	-2,466.20	2,667.99	0.00	0.00	0.00	
11,900.00	90.00	263.54	7,824.00	1,688.68	-2,565.56	2,765.02	0.00	0.00	0.00	
12,000.00	90.00	263.54	7,824.00	1,677.43	-2,664.93	2,862.04	0.00	0.00	0.00	
12,100.00	90.00	263.54	7,824.00	1,666.18	-2,764.29	2,959.07	0.00	0.00	0.00	
12,200.00	90.00	263.54	7,824.00	1,654.93	-2,863.66	3,056.10	0.00	0.00	0.00	
12,300.00	90.00	263.54	7,824.00	1,643.68	-2,963.02	3,153.13	0.00	0.00	0.00	
12,400.00	90.00	263.54	7,824.00	1,632.43	-3,062.39	3,250.16	0.00	0.00	0.00	
12,500.00	90.00	263.54	7,824.00	1,621.18	-3,161.75	3,347.19	0.00	0.00	0.00	
12,600.00	90.00	263.54	7,824.00	1,609.93	-3,261.12	3,444.22	0.00	0.00	0.00	

Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 1BH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KBE 25' @ 5948.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5948.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 1BH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
12,700.00	90.00	263.54	7,824.00	1,598.68	-3,360.48	3,541.25	0.00	0.00	0.00	
12,800.00	90.00	263.54	7,824.00	1,587.43	-3,459.85	3,638.27	0.00	0.00	0.00	
12,900.00	90.00	263.54	7,824.00	1,576.17	-3,559.21	3,735.30	0.00	0.00	0.00	
13,000.00	90.00	263.54	7,824.00	1,564.92	-3,658.58	3,832.33	0.00	0.00	0.00	
13,100.00	90.00	263.54	7,824.00	1,553.67	-3,757.94	3,929.36	0.00	0.00	0.00	
13,200.00	90.00	263.54	7,824.00	1,542.42	-3,857.31	4,026.39	0.00	0.00	0.00	
13,300.00	90.00	263.54	7,824.00	1,531.17	-3,956.67	4,123.42	0.00	0.00	0.00	
13,400.00	90.00	263.54	7,824.00	1,519.92	-4,056.04	4,220.45	0.00	0.00	0.00	
13,500.00	90.00	263.54	7,824.00	1,508.67	-4,155.40	4,317.48	0.00	0.00	0.00	
13,600.00	90.00	263.54	7,824.00	1,497.42	-4,254.77	4,414.50	0.00	0.00	0.00	
13,700.00	90.00	263.54	7,824.00	1,486.17	-4,354.13	4,511.53	0.00	0.00	0.00	
13,731.94	90.00	263.54	7,824.00	1,482.58	-4,385.88	4,542.53	0.00	0.00	0.00	
Start DLS 2.00 TFO 90.00										
13,800.00	90.00	264.90	7,824.00	1,475.72	-4,453.58	4,608.75	2.00	0.00	2.00	
13,900.00	90.00	266.90	7,824.00	1,468.58	-4,553.32	4,706.69	2.00	0.00	2.00	
14,000.00	90.00	268.90	7,824.00	1,464.91	-4,653.25	4,805.27	2.00	0.00	2.00	
14,100.00	90.00	270.90	7,824.00	1,464.74	-4,753.25	4,904.38	2.00	0.00	2.00	
14,111.13	90.00	271.12	7,824.00	1,464.94	-4,764.37	4,915.44	2.00	0.00	2.00	
Start 7397.29 hold at 14111.13 MD										
14,200.00	90.00	271.12	7,824.00	1,466.68	-4,853.23	5,003.75	0.00	0.00	0.00	
14,300.00	90.00	271.12	7,824.00	1,468.64	-4,953.21	5,103.12	0.00	0.00	0.00	
14,400.00	90.00	271.12	7,824.00	1,470.60	-5,053.19	5,202.50	0.00	0.00	0.00	
14,500.00	90.00	271.12	7,824.00	1,472.57	-5,153.17	5,301.87	0.00	0.00	0.00	
14,600.00	90.00	271.12	7,824.00	1,474.53	-5,253.15	5,401.24	0.00	0.00	0.00	
14,700.00	90.00	271.12	7,824.00	1,476.49	-5,353.13	5,500.62	0.00	0.00	0.00	
14,800.00	90.00	271.12	7,824.00	1,478.45	-5,453.11	5,599.99	0.00	0.00	0.00	
14,900.00	90.00	271.12	7,824.00	1,480.41	-5,553.09	5,699.36	0.00	0.00	0.00	
15,000.00	90.00	271.12	7,824.00	1,482.37	-5,653.07	5,798.74	0.00	0.00	0.00	
15,100.00	90.00	271.12	7,824.00	1,484.33	-5,753.05	5,898.11	0.00	0.00	0.00	
15,200.00	90.00	271.12	7,824.00	1,486.30	-5,853.03	5,997.48	0.00	0.00	0.00	
15,300.00	90.00	271.12	7,824.00	1,488.26	-5,953.02	6,096.86	0.00	0.00	0.00	
15,400.00	90.00	271.12	7,824.00	1,490.22	-6,053.00	6,196.23	0.00	0.00	0.00	
15,500.00	90.00	271.12	7,824.00	1,492.18	-6,152.98	6,295.60	0.00	0.00	0.00	
15,600.00	90.00	271.12	7,824.00	1,494.14	-6,252.96	6,394.98	0.00	0.00	0.00	
15,700.00	90.00	271.12	7,824.00	1,496.10	-6,352.94	6,494.35	0.00	0.00	0.00	
15,800.00	90.00	271.12	7,824.00	1,498.06	-6,452.92	6,593.72	0.00	0.00	0.00	
15,900.00	90.00	271.12	7,824.00	1,500.03	-6,552.90	6,693.10	0.00	0.00	0.00	
16,000.00	90.00	271.12	7,824.00	1,501.99	-6,652.88	6,792.47	0.00	0.00	0.00	
16,100.00	90.00	271.12	7,824.00	1,503.95	-6,752.86	6,891.84	0.00	0.00	0.00	
16,200.00	90.00	271.12	7,824.00	1,505.91	-6,852.84	6,991.21	0.00	0.00	0.00	
16,300.00	90.00	271.12	7,824.00	1,507.87	-6,952.82	7,090.59	0.00	0.00	0.00	
16,400.00	90.00	271.12	7,824.00	1,509.83	-7,052.80	7,189.96	0.00	0.00	0.00	
16,500.00	90.00	271.12	7,824.00	1,511.79	-7,152.78	7,289.33	0.00	0.00	0.00	
16,600.00	90.00	271.12	7,824.00	1,513.76	-7,252.77	7,388.71	0.00	0.00	0.00	
16,700.00	90.00	271.12	7,824.00	1,515.72	-7,352.75	7,488.08	0.00	0.00	0.00	
16,800.00	90.00	271.12	7,824.00	1,517.68	-7,452.73	7,587.45	0.00	0.00	0.00	
16,900.00	90.00	271.12	7,824.00	1,519.64	-7,552.71	7,686.83	0.00	0.00	0.00	
17,000.00	90.00	271.12	7,824.00	1,521.60	-7,652.69	7,786.20	0.00	0.00	0.00	
17,100.00	90.00	271.12	7,824.00	1,523.56	-7,752.67	7,885.57	0.00	0.00	0.00	
17,200.00	90.00	271.12	7,824.00	1,525.52	-7,852.65	7,984.95	0.00	0.00	0.00	
17,300.00	90.00	271.12	7,824.00	1,527.49	-7,952.63	8,084.32	0.00	0.00	0.00	
17,400.00	90.00	271.12	7,824.00	1,529.45	-8,052.61	8,183.69	0.00	0.00	0.00	
17,500.00	90.00	271.12	7,824.00	1,531.41	-8,152.59	8,283.07	0.00	0.00	0.00	
17,600.00	90.00	271.12	7,824.00	1,533.37	-8,252.57	8,382.44	0.00	0.00	0.00	

Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 1BH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KBE 25' @ 5948.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5948.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 1BH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
17,700.00	90.00	271.12	7,824.00	1,535.33	-8,352.55	8,481.81	0.00	0.00	0.00
17,800.00	90.00	271.12	7,824.00	1,537.29	-8,452.53	8,581.19	0.00	0.00	0.00
17,900.00	90.00	271.12	7,824.00	1,539.25	-8,552.52	8,680.56	0.00	0.00	0.00
18,000.00	90.00	271.12	7,824.00	1,541.22	-8,652.50	8,779.93	0.00	0.00	0.00
18,100.00	90.00	271.12	7,824.00	1,543.18	-8,752.48	8,879.31	0.00	0.00	0.00
18,200.00	90.00	271.12	7,824.00	1,545.14	-8,852.46	8,978.68	0.00	0.00	0.00
18,300.00	90.00	271.12	7,824.00	1,547.10	-8,952.44	9,078.05	0.00	0.00	0.00
18,400.00	90.00	271.12	7,824.00	1,549.06	-9,052.42	9,177.43	0.00	0.00	0.00
18,500.00	90.00	271.12	7,824.00	1,551.02	-9,152.40	9,276.80	0.00	0.00	0.00
18,600.00	90.00	271.12	7,824.00	1,552.98	-9,252.38	9,376.17	0.00	0.00	0.00
18,700.00	90.00	271.12	7,824.00	1,554.95	-9,352.36	9,475.55	0.00	0.00	0.00
18,800.00	90.00	271.12	7,824.00	1,556.91	-9,452.34	9,574.92	0.00	0.00	0.00
18,900.00	90.00	271.12	7,824.00	1,558.87	-9,552.32	9,674.29	0.00	0.00	0.00
19,000.00	90.00	271.12	7,824.00	1,560.83	-9,652.30	9,773.67	0.00	0.00	0.00
19,100.00	90.00	271.12	7,824.00	1,562.79	-9,752.28	9,873.04	0.00	0.00	0.00
19,200.00	90.00	271.12	7,824.00	1,564.75	-9,852.27	9,972.41	0.00	0.00	0.00
19,300.00	90.00	271.12	7,824.00	1,566.71	-9,952.25	10,071.79	0.00	0.00	0.00
19,400.00	90.00	271.12	7,824.00	1,568.68	-10,052.23	10,171.16	0.00	0.00	0.00
19,500.00	90.00	271.12	7,824.00	1,570.64	-10,152.21	10,270.53	0.00	0.00	0.00
19,600.00	90.00	271.12	7,824.00	1,572.60	-10,252.19	10,369.90	0.00	0.00	0.00
19,700.00	90.00	271.12	7,824.00	1,574.56	-10,352.17	10,469.28	0.00	0.00	0.00
19,800.00	90.00	271.12	7,824.00	1,576.52	-10,452.15	10,568.65	0.00	0.00	0.00
19,900.00	90.00	271.12	7,824.00	1,578.48	-10,552.13	10,668.02	0.00	0.00	0.00
20,000.00	90.00	271.12	7,824.00	1,580.44	-10,652.11	10,767.40	0.00	0.00	0.00
20,100.00	90.00	271.12	7,824.00	1,582.41	-10,752.09	10,866.77	0.00	0.00	0.00
20,200.00	90.00	271.12	7,824.00	1,584.37	-10,852.07	10,966.14	0.00	0.00	0.00
20,300.00	90.00	271.12	7,824.00	1,586.33	-10,952.05	11,065.52	0.00	0.00	0.00
20,400.00	90.00	271.12	7,824.00	1,588.29	-11,052.03	11,164.89	0.00	0.00	0.00
20,500.00	90.00	271.12	7,824.00	1,590.25	-11,152.02	11,264.26	0.00	0.00	0.00
20,600.00	90.00	271.12	7,824.00	1,592.21	-11,252.00	11,363.64	0.00	0.00	0.00
20,700.00	90.00	271.12	7,824.00	1,594.17	-11,351.98	11,463.01	0.00	0.00	0.00
20,800.00	90.00	271.12	7,824.00	1,596.14	-11,451.96	11,562.38	0.00	0.00	0.00
20,900.00	90.00	271.12	7,824.00	1,598.10	-11,551.94	11,661.76	0.00	0.00	0.00
21,000.00	90.00	271.12	7,824.00	1,600.06	-11,651.92	11,761.13	0.00	0.00	0.00
21,100.00	90.00	271.12	7,824.00	1,602.02	-11,751.90	11,860.50	0.00	0.00	0.00
21,200.00	90.00	271.12	7,824.00	1,603.98	-11,851.88	11,959.88	0.00	0.00	0.00
21,300.00	90.00	271.12	7,824.00	1,605.94	-11,951.86	12,059.25	0.00	0.00	0.00
21,400.00	90.00	271.12	7,824.00	1,607.90	-12,051.84	12,158.62	0.00	0.00	0.00
21,500.00	90.00	271.12	7,824.00	1,609.87	-12,151.82	12,258.00	0.00	0.00	0.00
21,508.42	90.00	271.12	7,824.00	1,610.03	-12,160.24	12,266.36	0.00	0.00	0.00
TD at 21508.42									

Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 1BH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KBE 25' @ 5948.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5948.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 1BH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target - Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
LP-ST. HARVARD 5-64 - plan hits target center - Point	0.00	0.00	7,824.00	2,062.85	739.04	1,657,907.65	3,262,772.70	39.636046°N	104.566971°W
MID PNT-ST. HARVARD - plan hits target center - Point	0.00	0.00	7,824.00	1,482.58	-4,385.88	1,657,274.93	3,257,654.11	39.634452°N	104.585167°W
PBHL-ST. HARVARD 5- - plan hits target center - Point	0.00	0.00	7,824.00	1,610.03	-12,160.24	1,657,322.76	3,249,879.01	39.634795°N	104.612770°W

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(usft)	(usft)			(°)	(°)
24.00	24.00	Denver			
1,130.99	1,109.00	Arapahoe			
1,662.08	1,609.00	Laramie-Fox Hills Formation			
2,299.40	2,209.00	Pierre Formation			
2,862.36	2,739.00	Upper Pierre aquifer			
3,627.14	3,459.00	Base of Upper Pierre aquifer			
4,466.28	4,249.00	Larimer ("Parkman") sandstone			
4,614.98	4,389.00	Pierre Formation			
5,698.42	5,409.00	Terry ("Sussex") sandstone			
6,017.08	5,709.00	Pierre Formation			
6,574.73	6,234.00	Hygiene ("Shannon") sandstone			
6,962.44	6,599.00	Pierre Formation			
7,672.06	7,269.00	Sharon Springs Member			
8,574.29	7,824.00	Niobrara Formation			

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
100.00	100.00	0.00	0.00	Start Build 2.00
1,085.20	1,065.89	138.92	94.01	Start 6462.48 hold at 1085.20 MD
7,547.68	7,149.98	1,943.48	1,315.15	Start DLS 10.00 TFO -128.85
8,574.29	7,824.00	2,062.85	739.04	Start 5157.66 hold at 8574.29 MD
13,731.94	7,824.00	1,482.58	-4,385.88	Start DLS 2.00 TFO 90.00
14,111.13	7,824.00	1,464.94	-4,764.37	Start 7397.29 hold at 14111.13 MD
21,508.42	7,824.00	1,610.03	-12,160.24	TD at 21508.42