

CRESTONE PEAK RESOURCES

ARAPAHOE COUNTY

SEC 8-T5S-R64W

STATE HARVARD 5-64 8-7-12 3BH

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 3BH
 Wellbore: OWB
 Design: PROPOSAL 1



Azimuths to True North
 Magnetic North: 7.28°
 Magnetic Field
 Strength: 51163.7nT
 Dip Angle: 65.91°
 Date: 3/20/2025
 Model: IGRF2020

WELL DETAILS: STATE HARVARD 5-64 8-7-12 3BH

+N/-S	+E/-W	Northing	Easting	5926.00 Latitude	Longitude	Slot
0.00	0.00	1655784.68	3261994.54	39.630240°N	104.569811°W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	
3	1167.39	13.35	116.59	1161.37	-34.64	69.20	2.00	116.59	-66.95	
4	7309.30	13.35	116.59	7137.36	-669.41	1337.13	0.00	0.00	-1293.69	
5	8327.84	90.00	269.44	7824.00	-749.26	777.15	10.00	152.20	-729.88	LP-ST. HARVARD 5-64 8-7-12 3BH
6	13451.79	90.00	269.44	7824.00	-799.54	-4346.56	0.00	0.00	4387.32	MP-ST. HARVARD 5-64 8-7-12 3BH
7	13501.57	90.00	270.43	7824.00	-799.59	-4396.34	2.00	90.00	4437.00	
8	21206.27	90.00	270.43	7824.00	-741.31	-12100.82	0.00	0.00	12123.51	PBHL-ST. HARVARD 5-64 8-7-12 3BH

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	Start Build 2.00
1167.39	13.35	116.59	1161.37	-34.64	69.20	-66.95	77.39	Start 6141.91 hold at 1167.39 MD
7309.30	13.35	116.59	7137.36	-669.41	1337.13	-1293.69	1495.33	Start DLS 10.00 TFO 152.20
8327.84	90.00	269.44	7824.00	-749.26	777.15	-729.88	2097.74	Start 5123.95 hold at 8327.84 MD
13451.79	90.00	269.44	7824.00	-799.54	-4346.56	4387.32	7221.69	Start DLS 2.00 TFO 90.00
13501.57	90.00	270.43	7824.00	-799.59	-4396.34	4437.00	7271.47	Start 7704.70 hold at 13501.57 MD
21206.27	90.00	270.43	7824.00	-741.31	-12100.82	12123.51	14976.18	TD at 21206.27

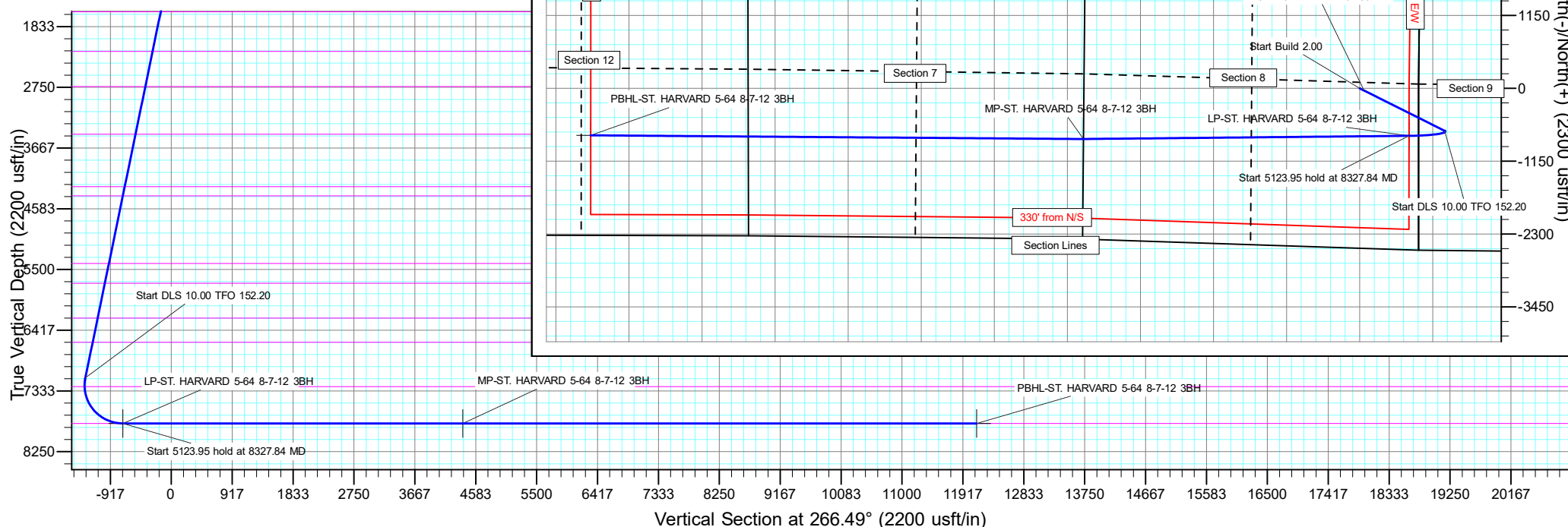
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
LP-ST. HARVARD 5-64 8-7-12 3BH	7824.00	-749.26	777.15	1655043.43	3262779.30	39.628183°N	104.567052°W	Point
- plan hits target center								
MP-ST. HARVARD 5-64 8-7-12 3BH	7824.00	-799.54	-4346.56	1654940.70	3257656.49	39.628044°N	104.585242°W	Point
- plan hits target center								
PBHL-ST. HARVARD 5-64 8-7-12 3BH	7824.00	-741.31	-12100.82	1654919.52	3249902.20	39.628197°N	104.612771°W	Point
- plan hits target center								

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:
 2523' FSL, 928' FEL
 SEC 8-T5S-R64W
 LP:
 1800' FSL, 150' FEL
 SEC 8-T5S-R64W
 BHL:
 1580' FSL, 2479' FEL
 SEC 12-T5S-R65W



Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 3BH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KBE 25' @ 5951.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5951.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 3BH	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	Latitude:	39.637796°N
From:	Lat/Long	Easting:	3,262,923.29 usft	Longitude:	104.566413°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.59 °

Well	STATE HARVARD 5-64 8-7-12 3BH					
Well Position	+N/-S	-2,752.35 usft	Northing:	1,655,784.68 usft	Latitude:	39.630240°N
	+E/-W	-957.11 usft	Easting:	3,261,994.54 usft	Longitude:	104.569811°W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	5,926.00 usft

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	3/20/2025	7.28	65.91	51,163.66045351

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	266.49	

Plan Survey Tool Program	Date	5/15/2025			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	21,205.30 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	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,167.39	13.35	116.59	1,161.37	-34.64	69.20	2.00	2.00	0.00	116.59	
7,309.30	13.35	116.59	7,137.36	-669.41	1,337.13	0.00	0.00	0.00	0.00	
8,327.84	90.00	269.44	7,824.00	-749.26	777.15	10.00	7.53	15.01	152.20	LP-ST. HARVARD 5-
13,451.79	90.00	269.44	7,824.00	-799.54	-4,346.56	0.00	0.00	0.00	0.00	MP-ST. HARVARD 5-
13,501.57	90.00	270.43	7,824.00	-799.59	-4,396.34	2.00	0.00	2.00	90.00	
21,206.27	90.00	270.43	7,824.00	-741.31	-12,100.82	0.00	0.00	0.00	0.00	PBHL-ST. HARVARD

Civitas Resources

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Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5951.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 3BH	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
200.00	0.00	0.00	200.00	0.00	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	0.00
400.00	0.00	0.00	400.00	0.00	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	0.00
Start Build 2.00										
600.00	2.00	116.59	599.98	-0.78	1.56	-1.51	2.00	2.00	0.00	0.00
700.00	4.00	116.59	699.84	-3.12	6.24	-6.04	2.00	2.00	0.00	0.00
800.00	6.00	116.59	799.45	-7.03	14.03	-13.58	2.00	2.00	0.00	0.00
900.00	8.00	116.59	898.70	-12.48	24.93	-24.12	2.00	2.00	0.00	0.00
1,000.00	10.00	116.59	997.47	-19.48	38.92	-37.65	2.00	2.00	0.00	0.00
1,100.00	12.00	116.59	1,095.62	-28.02	55.98	-54.16	2.00	2.00	0.00	0.00
1,113.68	12.27	116.59	1,109.00	-29.31	58.55	-56.65	2.00	2.00	0.00	0.00
Arapahoe										
1,167.39	13.35	116.59	1,161.37	-34.64	69.20	-66.95	2.00	2.00	0.00	0.00
Start 6141.91 hold at 1167.39 MD										
1,200.00	13.35	116.59	1,193.10	-38.01	75.93	-73.47	0.00	0.00	0.00	0.00
1,300.00	13.35	116.59	1,290.40	-48.35	96.58	-93.44	0.00	0.00	0.00	0.00
1,400.00	13.35	116.59	1,387.70	-58.68	117.22	-113.41	0.00	0.00	0.00	0.00
1,500.00	13.35	116.59	1,484.99	-69.02	137.86	-133.39	0.00	0.00	0.00	0.00
1,600.00	13.35	116.59	1,582.29	-79.35	158.51	-153.36	0.00	0.00	0.00	0.00
1,627.45	13.35	116.59	1,609.00	-82.19	164.17	-158.84	0.00	0.00	0.00	0.00
Laramie-Fox Hills Formation										
1,700.00	13.35	116.59	1,679.59	-89.69	179.15	-173.33	0.00	0.00	0.00	0.00
1,800.00	13.35	116.59	1,776.89	-100.02	199.80	-193.31	0.00	0.00	0.00	0.00
1,900.00	13.35	116.59	1,874.19	-110.36	220.44	-213.28	0.00	0.00	0.00	0.00
2,000.00	13.35	116.59	1,971.49	-120.69	241.08	-233.25	0.00	0.00	0.00	0.00
2,100.00	13.35	116.59	2,068.79	-131.03	261.73	-253.23	0.00	0.00	0.00	0.00
2,200.00	13.35	116.59	2,166.08	-141.36	282.37	-273.20	0.00	0.00	0.00	0.00
2,244.11	13.35	116.59	2,209.00	-145.92	291.48	-282.01	0.00	0.00	0.00	0.00
Pierre Formation										
2,300.00	13.35	116.59	2,263.38	-151.70	303.01	-293.17	0.00	0.00	0.00	0.00
2,400.00	13.35	116.59	2,360.68	-162.03	323.66	-313.15	0.00	0.00	0.00	0.00
2,500.00	13.35	116.59	2,457.98	-172.37	344.30	-333.12	0.00	0.00	0.00	0.00
2,600.00	13.35	116.59	2,555.28	-182.70	364.95	-353.09	0.00	0.00	0.00	0.00
2,700.00	13.35	116.59	2,652.58	-193.04	385.59	-373.06	0.00	0.00	0.00	0.00
2,788.82	13.35	116.59	2,739.00	-202.22	403.93	-390.81	0.00	0.00	0.00	0.00
Upper Pierre aquifer										
2,800.00	13.35	116.59	2,749.88	-203.37	406.23	-393.04	0.00	0.00	0.00	0.00
2,900.00	13.35	116.59	2,847.18	-213.71	426.88	-413.01	0.00	0.00	0.00	0.00
3,000.00	13.35	116.59	2,944.47	-224.04	447.52	-432.98	0.00	0.00	0.00	0.00
3,100.00	13.35	116.59	3,041.77	-234.38	468.17	-452.96	0.00	0.00	0.00	0.00
3,200.00	13.35	116.59	3,139.07	-244.71	488.81	-472.93	0.00	0.00	0.00	0.00
3,300.00	13.35	116.59	3,236.37	-255.05	509.45	-492.90	0.00	0.00	0.00	0.00
3,400.00	13.35	116.59	3,333.67	-265.38	530.10	-512.88	0.00	0.00	0.00	0.00
3,500.00	13.35	116.59	3,430.97	-275.72	550.74	-532.85	0.00	0.00	0.00	0.00
3,528.81	13.35	116.59	3,459.00	-278.69	556.69	-538.61	0.00	0.00	0.00	0.00
Base of Upper Pierre aquifer										
3,600.00	13.35	116.59	3,528.27	-286.05	571.38	-552.82	0.00	0.00	0.00	0.00
3,700.00	13.35	116.59	3,625.56	-296.39	592.03	-572.80	0.00	0.00	0.00	0.00

Civitas Resources

Planning Report

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Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KBE 25' @ 5951.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5951.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 3BH	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	13.35	116.59	3,722.86	-306.72	612.67	-592.77	0.00	0.00	0.00
3,900.00	13.35	116.59	3,820.16	-317.06	633.32	-612.74	0.00	0.00	0.00
4,000.00	13.35	116.59	3,917.46	-327.39	653.96	-632.72	0.00	0.00	0.00
4,100.00	13.35	116.59	4,014.76	-337.73	674.60	-652.69	0.00	0.00	0.00
4,200.00	13.35	116.59	4,112.06	-348.06	695.25	-672.66	0.00	0.00	0.00
4,300.00	13.35	116.59	4,209.36	-358.40	715.89	-692.64	0.00	0.00	0.00
4,340.75	13.35	116.59	4,249.00	-362.61	724.30	-700.78	0.00	0.00	0.00
Larimer ("Parkman") sandstone									
4,400.00	13.35	116.59	4,306.65	-368.73	736.54	-712.61	0.00	0.00	0.00
4,484.63	13.35	116.59	4,389.00	-377.48	754.01	-729.51	0.00	0.00	0.00
Pierre Formation									
4,500.00	13.35	116.59	4,403.95	-379.07	757.18	-732.58	0.00	0.00	0.00
4,600.00	13.35	116.59	4,501.25	-389.40	777.82	-752.56	0.00	0.00	0.00
4,700.00	13.35	116.59	4,598.55	-399.74	798.47	-772.53	0.00	0.00	0.00
4,800.00	13.35	116.59	4,695.85	-410.07	819.11	-792.50	0.00	0.00	0.00
4,900.00	13.35	116.59	4,793.15	-420.41	839.75	-812.48	0.00	0.00	0.00
5,000.00	13.35	116.59	4,890.45	-430.74	860.40	-832.45	0.00	0.00	0.00
5,100.00	13.35	116.59	4,987.74	-441.08	881.04	-852.42	0.00	0.00	0.00
5,200.00	13.35	116.59	5,085.04	-451.41	901.69	-872.40	0.00	0.00	0.00
5,300.00	13.35	116.59	5,182.34	-461.75	922.33	-892.37	0.00	0.00	0.00
5,400.00	13.35	116.59	5,279.64	-472.08	942.97	-912.34	0.00	0.00	0.00
5,500.00	13.35	116.59	5,376.94	-482.42	963.62	-932.32	0.00	0.00	0.00
5,532.95	13.35	116.59	5,409.00	-485.82	970.42	-938.90	0.00	0.00	0.00
Terry ("Sussex") sandstone									
5,600.00	13.35	116.59	5,474.24	-492.75	984.26	-952.29	0.00	0.00	0.00
5,700.00	13.35	116.59	5,571.54	-503.09	1,004.91	-972.26	0.00	0.00	0.00
5,800.00	13.35	116.59	5,668.84	-513.42	1,025.55	-992.24	0.00	0.00	0.00
5,841.28	13.35	116.59	5,709.00	-517.69	1,034.07	-1,000.48	0.00	0.00	0.00
Pierre Formation									
5,900.00	13.35	116.59	5,766.13	-523.76	1,046.19	-1,012.21	0.00	0.00	0.00
6,000.00	13.35	116.59	5,863.43	-534.09	1,066.84	-1,032.18	0.00	0.00	0.00
6,100.00	13.35	116.59	5,960.73	-544.43	1,087.48	-1,052.16	0.00	0.00	0.00
6,200.00	13.35	116.59	6,058.03	-554.76	1,108.12	-1,072.13	0.00	0.00	0.00
6,300.00	13.35	116.59	6,155.33	-565.10	1,128.77	-1,092.10	0.00	0.00	0.00
6,380.86	13.35	116.59	6,234.00	-573.45	1,145.46	-1,108.25	0.00	0.00	0.00
Hygiene ("Shannon") sandstone									
6,400.00	13.35	116.59	6,252.63	-575.43	1,149.41	-1,112.08	0.00	0.00	0.00
6,500.00	13.35	116.59	6,349.93	-585.77	1,170.06	-1,132.05	0.00	0.00	0.00
6,600.00	13.35	116.59	6,447.22	-596.10	1,190.70	-1,152.02	0.00	0.00	0.00
6,700.00	13.35	116.59	6,544.52	-606.44	1,211.34	-1,172.00	0.00	0.00	0.00
6,755.99	13.35	116.59	6,599.00	-612.22	1,222.90	-1,183.18	0.00	0.00	0.00
Pierre Formation									
6,800.00	13.35	116.59	6,641.82	-616.77	1,231.99	-1,191.97	0.00	0.00	0.00
6,900.00	13.35	116.59	6,739.12	-627.10	1,252.63	-1,211.94	0.00	0.00	0.00
7,000.00	13.35	116.59	6,836.42	-637.44	1,273.28	-1,231.92	0.00	0.00	0.00
7,100.00	13.35	116.59	6,933.72	-647.77	1,293.92	-1,251.89	0.00	0.00	0.00
7,200.00	13.35	116.59	7,031.02	-658.11	1,314.56	-1,271.86	0.00	0.00	0.00
7,300.00	13.35	116.59	7,128.31	-668.44	1,335.21	-1,291.84	0.00	0.00	0.00
7,309.30	13.35	116.59	7,137.36	-669.41	1,337.13	-1,293.69	0.00	0.00	0.00
Start DLS 10.00 TFO 152.20									
7,400.00	6.78	155.13	7,226.71	-678.97	1,348.76	-1,304.72	10.00	-7.25	42.49
7,442.55	6.35	192.86	7,269.00	-683.54	1,349.30	-1,304.97	10.00	-1.00	88.65
Sharon Springs Member									

Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 3BH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KBE 25' @ 5951.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5951.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 3BH	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)
7,500.00	9.49	229.06	7,325.93	-689.75	1,345.01	-1,300.31	10.00	5.46	63.02
7,600.00	18.26	250.28	7,422.97	-700.47	1,323.98	-1,278.67	10.00	8.77	21.22
7,700.00	27.86	257.61	7,514.89	-710.79	1,286.32	-1,240.45	10.00	9.60	7.34
7,800.00	37.65	261.37	7,598.90	-720.41	1,233.16	-1,186.81	10.00	9.80	3.76
7,900.00	47.52	263.75	7,672.44	-729.03	1,166.14	-1,119.38	10.00	9.87	2.38
8,000.00	57.43	265.47	7,733.27	-736.39	1,087.27	-1,040.21	10.00	9.91	1.72
8,100.00	67.36	266.85	7,779.55	-742.27	998.97	-951.71	10.00	9.93	1.38
8,200.00	77.29	268.04	7,809.88	-746.49	903.90	-856.57	10.00	9.94	1.19
8,300.00	87.23	269.14	7,823.33	-748.92	804.97	-757.67	10.00	9.94	1.10
8,327.84	90.00	269.44	7,824.00	-749.26	777.15	-729.88	10.00	9.94	1.08
Start 5123.95 hold at 8327.84 MD - Niobrara Formation									
8,400.00	90.00	269.44	7,824.00	-749.97	704.99	-657.81	0.00	0.00	0.00
8,500.00	90.00	269.44	7,824.00	-750.95	604.99	-557.94	0.00	0.00	0.00
8,600.00	90.00	269.44	7,824.00	-751.93	505.00	-458.07	0.00	0.00	0.00
8,700.00	90.00	269.44	7,824.00	-752.92	405.00	-358.20	0.00	0.00	0.00
8,800.00	90.00	269.44	7,824.00	-753.90	305.01	-258.34	0.00	0.00	0.00
8,900.00	90.00	269.44	7,824.00	-754.88	205.01	-158.47	0.00	0.00	0.00
9,000.00	90.00	269.44	7,824.00	-755.86	105.02	-58.60	0.00	0.00	0.00
9,100.00	90.00	269.44	7,824.00	-756.84	5.02	41.27	0.00	0.00	0.00
9,200.00	90.00	269.44	7,824.00	-757.82	-94.98	141.14	0.00	0.00	0.00
9,300.00	90.00	269.44	7,824.00	-758.80	-194.97	241.00	0.00	0.00	0.00
9,400.00	90.00	269.44	7,824.00	-759.78	-294.97	340.87	0.00	0.00	0.00
9,500.00	90.00	269.44	7,824.00	-760.76	-394.96	440.74	0.00	0.00	0.00
9,600.00	90.00	269.44	7,824.00	-761.75	-494.96	540.61	0.00	0.00	0.00
9,700.00	90.00	269.44	7,824.00	-762.73	-594.95	640.48	0.00	0.00	0.00
9,800.00	90.00	269.44	7,824.00	-763.71	-694.95	740.34	0.00	0.00	0.00
9,900.00	90.00	269.44	7,824.00	-764.69	-794.94	840.21	0.00	0.00	0.00
10,000.00	90.00	269.44	7,824.00	-765.67	-894.94	940.08	0.00	0.00	0.00
10,100.00	90.00	269.44	7,824.00	-766.65	-994.93	1,039.95	0.00	0.00	0.00
10,200.00	90.00	269.44	7,824.00	-767.63	-1,094.93	1,139.82	0.00	0.00	0.00
10,300.00	90.00	269.44	7,824.00	-768.61	-1,194.92	1,239.68	0.00	0.00	0.00
10,400.00	90.00	269.44	7,824.00	-769.60	-1,294.92	1,339.55	0.00	0.00	0.00
10,500.00	90.00	269.44	7,824.00	-770.58	-1,394.91	1,439.42	0.00	0.00	0.00
10,600.00	90.00	269.44	7,824.00	-771.56	-1,494.91	1,539.29	0.00	0.00	0.00
10,700.00	90.00	269.44	7,824.00	-772.54	-1,594.90	1,639.16	0.00	0.00	0.00
10,800.00	90.00	269.44	7,824.00	-773.52	-1,694.90	1,739.03	0.00	0.00	0.00
10,900.00	90.00	269.44	7,824.00	-774.50	-1,794.89	1,838.89	0.00	0.00	0.00
11,000.00	90.00	269.44	7,824.00	-775.48	-1,894.89	1,938.76	0.00	0.00	0.00
11,100.00	90.00	269.44	7,824.00	-776.46	-1,994.88	2,038.63	0.00	0.00	0.00
11,200.00	90.00	269.44	7,824.00	-777.44	-2,094.88	2,138.50	0.00	0.00	0.00
11,300.00	90.00	269.44	7,824.00	-778.43	-2,194.87	2,238.37	0.00	0.00	0.00
11,400.00	90.00	269.44	7,824.00	-779.41	-2,294.87	2,338.23	0.00	0.00	0.00
11,500.00	90.00	269.44	7,824.00	-780.39	-2,394.86	2,438.10	0.00	0.00	0.00
11,600.00	90.00	269.44	7,824.00	-781.37	-2,494.86	2,537.97	0.00	0.00	0.00
11,700.00	90.00	269.44	7,824.00	-782.35	-2,594.86	2,637.84	0.00	0.00	0.00
11,800.00	90.00	269.44	7,824.00	-783.33	-2,694.85	2,737.71	0.00	0.00	0.00
11,900.00	90.00	269.44	7,824.00	-784.31	-2,794.85	2,837.57	0.00	0.00	0.00
12,000.00	90.00	269.44	7,824.00	-785.29	-2,894.84	2,937.44	0.00	0.00	0.00
12,100.00	90.00	269.44	7,824.00	-786.28	-2,994.84	3,037.31	0.00	0.00	0.00
12,200.00	90.00	269.44	7,824.00	-787.26	-3,094.83	3,137.18	0.00	0.00	0.00
12,300.00	90.00	269.44	7,824.00	-788.24	-3,194.83	3,237.05	0.00	0.00	0.00
12,400.00	90.00	269.44	7,824.00	-789.22	-3,294.82	3,336.91	0.00	0.00	0.00
12,500.00	90.00	269.44	7,824.00	-790.20	-3,394.82	3,436.78	0.00	0.00	0.00
12,600.00	90.00	269.44	7,824.00	-791.18	-3,494.81	3,536.65	0.00	0.00	0.00

Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 3BH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KBE 25' @ 5951.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5951.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 3BH	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	269.44	7,824.00	-792.16	-3,594.81	3,636.52	0.00	0.00	0.00	
12,800.00	90.00	269.44	7,824.00	-793.14	-3,694.80	3,736.39	0.00	0.00	0.00	
12,900.00	90.00	269.44	7,824.00	-794.12	-3,794.80	3,836.25	0.00	0.00	0.00	
13,000.00	90.00	269.44	7,824.00	-795.11	-3,894.79	3,936.12	0.00	0.00	0.00	
13,100.00	90.00	269.44	7,824.00	-796.09	-3,994.79	4,035.99	0.00	0.00	0.00	
13,200.00	90.00	269.44	7,824.00	-797.07	-4,094.78	4,135.86	0.00	0.00	0.00	
13,300.00	90.00	269.44	7,824.00	-798.05	-4,194.78	4,235.73	0.00	0.00	0.00	
13,400.00	90.00	269.44	7,824.00	-799.03	-4,294.77	4,335.60	0.00	0.00	0.00	
13,451.79	90.00	269.44	7,824.00	-799.54	-4,346.56	4,387.32	0.00	0.00	0.00	
Start DLS 2.00 TFO 90.00										
13,500.00	90.00	270.40	7,824.00	-799.61	-4,394.77	4,435.44	2.00	0.00	2.00	
13,501.57	90.00	270.43	7,824.00	-799.59	-4,396.34	4,437.00	2.00	0.00	2.00	
Start 7704.70 hold at 13501.57 MD										
13,600.00	90.00	270.43	7,824.00	-798.85	-4,494.77	4,535.20	0.00	0.00	0.00	
13,700.00	90.00	270.43	7,824.00	-798.09	-4,594.76	4,634.97	0.00	0.00	0.00	
13,800.00	90.00	270.43	7,824.00	-797.34	-4,694.76	4,734.73	0.00	0.00	0.00	
13,900.00	90.00	270.43	7,824.00	-796.58	-4,794.76	4,834.50	0.00	0.00	0.00	
14,000.00	90.00	270.43	7,824.00	-795.82	-4,894.76	4,934.26	0.00	0.00	0.00	
14,100.00	90.00	270.43	7,824.00	-795.07	-4,994.75	5,034.02	0.00	0.00	0.00	
14,200.00	90.00	270.43	7,824.00	-794.31	-5,094.75	5,133.79	0.00	0.00	0.00	
14,300.00	90.00	270.43	7,824.00	-793.56	-5,194.75	5,233.55	0.00	0.00	0.00	
14,400.00	90.00	270.43	7,824.00	-792.80	-5,294.74	5,333.31	0.00	0.00	0.00	
14,500.00	90.00	270.43	7,824.00	-792.04	-5,394.74	5,433.08	0.00	0.00	0.00	
14,600.00	90.00	270.43	7,824.00	-791.29	-5,494.74	5,532.84	0.00	0.00	0.00	
14,700.00	90.00	270.43	7,824.00	-790.53	-5,594.74	5,632.61	0.00	0.00	0.00	
14,800.00	90.00	270.43	7,824.00	-789.77	-5,694.73	5,732.37	0.00	0.00	0.00	
14,900.00	90.00	270.43	7,824.00	-789.02	-5,794.73	5,832.13	0.00	0.00	0.00	
15,000.00	90.00	270.43	7,824.00	-788.26	-5,894.73	5,931.90	0.00	0.00	0.00	
15,100.00	90.00	270.43	7,824.00	-787.50	-5,994.72	6,031.66	0.00	0.00	0.00	
15,200.00	90.00	270.43	7,824.00	-786.75	-6,094.72	6,131.42	0.00	0.00	0.00	
15,300.00	90.00	270.43	7,824.00	-785.99	-6,194.72	6,231.19	0.00	0.00	0.00	
15,400.00	90.00	270.43	7,824.00	-785.23	-6,294.72	6,330.95	0.00	0.00	0.00	
15,500.00	90.00	270.43	7,824.00	-784.48	-6,394.71	6,430.72	0.00	0.00	0.00	
15,600.00	90.00	270.43	7,824.00	-783.72	-6,494.71	6,530.48	0.00	0.00	0.00	
15,700.00	90.00	270.43	7,824.00	-782.97	-6,594.71	6,630.24	0.00	0.00	0.00	
15,800.00	90.00	270.43	7,824.00	-782.21	-6,694.70	6,730.01	0.00	0.00	0.00	
15,900.00	90.00	270.43	7,824.00	-781.45	-6,794.70	6,829.77	0.00	0.00	0.00	
16,000.00	90.00	270.43	7,824.00	-780.70	-6,894.70	6,929.53	0.00	0.00	0.00	
16,100.00	90.00	270.43	7,824.00	-779.94	-6,994.70	7,029.30	0.00	0.00	0.00	
16,200.00	90.00	270.43	7,824.00	-779.18	-7,094.69	7,129.06	0.00	0.00	0.00	
16,300.00	90.00	270.43	7,824.00	-778.43	-7,194.69	7,228.83	0.00	0.00	0.00	
16,400.00	90.00	270.43	7,824.00	-777.67	-7,294.69	7,328.59	0.00	0.00	0.00	
16,500.00	90.00	270.43	7,824.00	-776.91	-7,394.68	7,428.35	0.00	0.00	0.00	
16,600.00	90.00	270.43	7,824.00	-776.16	-7,494.68	7,528.12	0.00	0.00	0.00	
16,700.00	90.00	270.43	7,824.00	-775.40	-7,594.68	7,627.88	0.00	0.00	0.00	
16,800.00	90.00	270.43	7,824.00	-774.64	-7,694.68	7,727.64	0.00	0.00	0.00	
16,900.00	90.00	270.43	7,824.00	-773.89	-7,794.67	7,827.41	0.00	0.00	0.00	
17,000.00	90.00	270.43	7,824.00	-773.13	-7,894.67	7,927.17	0.00	0.00	0.00	
17,100.00	90.00	270.43	7,824.00	-772.38	-7,994.67	8,026.94	0.00	0.00	0.00	
17,200.00	90.00	270.43	7,824.00	-771.62	-8,094.66	8,126.70	0.00	0.00	0.00	
17,300.00	90.00	270.43	7,824.00	-770.86	-8,194.66	8,226.46	0.00	0.00	0.00	
17,400.00	90.00	270.43	7,824.00	-770.11	-8,294.66	8,326.23	0.00	0.00	0.00	
17,500.00	90.00	270.43	7,824.00	-769.35	-8,394.66	8,425.99	0.00	0.00	0.00	
17,600.00	90.00	270.43	7,824.00	-768.59	-8,494.65	8,525.75	0.00	0.00	0.00	

Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 3BH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KBE 25' @ 5951.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5951.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 3BH	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	270.43	7,824.00	-767.84	-8,594.65	8,625.52	0.00	0.00	0.00
17,800.00	90.00	270.43	7,824.00	-767.08	-8,694.65	8,725.28	0.00	0.00	0.00
17,900.00	90.00	270.43	7,824.00	-766.32	-8,794.64	8,825.05	0.00	0.00	0.00
18,000.00	90.00	270.43	7,824.00	-765.57	-8,894.64	8,924.81	0.00	0.00	0.00
18,100.00	90.00	270.43	7,824.00	-764.81	-8,994.64	9,024.57	0.00	0.00	0.00
18,200.00	90.00	270.43	7,824.00	-764.05	-9,094.64	9,124.34	0.00	0.00	0.00
18,300.00	90.00	270.43	7,824.00	-763.30	-9,194.63	9,224.10	0.00	0.00	0.00
18,400.00	90.00	270.43	7,824.00	-762.54	-9,294.63	9,323.86	0.00	0.00	0.00
18,500.00	90.00	270.43	7,824.00	-761.79	-9,394.63	9,423.63	0.00	0.00	0.00
18,600.00	90.00	270.43	7,824.00	-761.03	-9,494.62	9,523.39	0.00	0.00	0.00
18,700.00	90.00	270.43	7,824.00	-760.27	-9,594.62	9,623.16	0.00	0.00	0.00
18,800.00	90.00	270.43	7,824.00	-759.52	-9,694.62	9,722.92	0.00	0.00	0.00
18,900.00	90.00	270.43	7,824.00	-758.76	-9,794.62	9,822.68	0.00	0.00	0.00
19,000.00	90.00	270.43	7,824.00	-758.00	-9,894.61	9,922.45	0.00	0.00	0.00
19,100.00	90.00	270.43	7,824.00	-757.25	-9,994.61	10,022.21	0.00	0.00	0.00
19,200.00	90.00	270.43	7,824.00	-756.49	-10,094.61	10,121.97	0.00	0.00	0.00
19,300.00	90.00	270.43	7,824.00	-755.73	-10,194.60	10,221.74	0.00	0.00	0.00
19,400.00	90.00	270.43	7,824.00	-754.98	-10,294.60	10,321.50	0.00	0.00	0.00
19,500.00	90.00	270.43	7,824.00	-754.22	-10,394.60	10,421.27	0.00	0.00	0.00
19,600.00	90.00	270.43	7,824.00	-753.46	-10,494.60	10,521.03	0.00	0.00	0.00
19,700.00	90.00	270.43	7,824.00	-752.71	-10,594.59	10,620.79	0.00	0.00	0.00
19,800.00	90.00	270.43	7,824.00	-751.95	-10,694.59	10,720.56	0.00	0.00	0.00
19,900.00	90.00	270.43	7,824.00	-751.20	-10,794.59	10,820.32	0.00	0.00	0.00
20,000.00	90.00	270.43	7,824.00	-750.44	-10,894.58	10,920.09	0.00	0.00	0.00
20,100.00	90.00	270.43	7,824.00	-749.68	-10,994.58	11,019.85	0.00	0.00	0.00
20,200.00	90.00	270.43	7,824.00	-748.93	-11,094.58	11,119.61	0.00	0.00	0.00
20,300.00	90.00	270.43	7,824.00	-748.17	-11,194.58	11,219.38	0.00	0.00	0.00
20,400.00	90.00	270.43	7,824.00	-747.41	-11,294.57	11,319.14	0.00	0.00	0.00
20,500.00	90.00	270.43	7,824.00	-746.66	-11,394.57	11,418.90	0.00	0.00	0.00
20,600.00	90.00	270.43	7,824.00	-745.90	-11,494.57	11,518.67	0.00	0.00	0.00
20,700.00	90.00	270.43	7,824.00	-745.14	-11,594.56	11,618.43	0.00	0.00	0.00
20,800.00	90.00	270.43	7,824.00	-744.39	-11,694.56	11,718.20	0.00	0.00	0.00
20,900.00	90.00	270.43	7,824.00	-743.63	-11,794.56	11,817.96	0.00	0.00	0.00
21,000.00	90.00	270.43	7,824.00	-742.87	-11,894.56	11,917.72	0.00	0.00	0.00
21,100.00	90.00	270.43	7,824.00	-742.12	-11,994.55	12,017.49	0.00	0.00	0.00
21,200.00	90.00	270.43	7,824.00	-741.36	-12,094.55	12,117.25	0.00	0.00	0.00
21,206.27	90.00	270.43	7,824.00	-741.31	-12,100.82	12,123.51	0.00	0.00	0.00
TD at 21206.27									

Civitas Resources

Planning Report

Database:	EDM	Local Co-ordinate Reference:	Well STATE HARVARD 5-64 8-7-12 3BH
Company:	CRESTONE PEAK RESOURCES	TVD Reference:	KBE 25' @ 5951.00usft
Project:	ARAPAHOE COUNTY	MD Reference:	KBE 25' @ 5951.00usft
Site:	SEC 8-T5S-R64W	North Reference:	True
Well:	STATE HARVARD 5-64 8-7-12 3BH	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	PROPOSAL 1		

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
MP-ST. HARVARD 5-64 - plan hits target center - Point	0.00	0.00	7,824.00	-799.54	-4,346.56	1,654,940.69	3,257,656.49	39.628044°N	104.585242°W
LP-ST. HARVARD 5-64 - plan hits target center - Point	0.00	0.00	7,824.00	-749.26	777.15	1,655,043.42	3,262,779.30	39.628183°N	104.567052°W
PBHL-ST. HARVARD 5- - plan hits target center - Point	0.00	0.00	7,824.00	-741.31	-12,100.82	1,654,919.52	3,249,902.20	39.628197°N	104.612771°W

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
24.00	24.00	Denver			
1,113.68	1,109.00	Arapahoe			
1,627.45	1,609.00	Laramie-Fox Hills Formation			
2,244.11	2,209.00	Pierre Formation			
2,788.82	2,739.00	Upper Pierre aquifer			
3,528.81	3,459.00	Base of Upper Pierre aquifer			
4,340.75	4,249.00	Larimer ("Parkman") sandstone			
4,484.63	4,389.00	Pierre Formation			
5,532.95	5,409.00	Terry ("Sussex") sandstone			
5,841.28	5,709.00	Pierre Formation			
6,380.86	6,234.00	Hygiene ("Shannon") sandstone			
6,755.99	6,599.00	Pierre Formation			
7,442.55	7,269.00	Sharon Springs Member			
8,327.84	7,824.00	Niobrara Formation			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.00	500.00	0.00	0.00	Start Build 2.00
1,167.39	1,161.37	-34.64	69.20	Start 6141.91 hold at 1167.39 MD
7,309.30	7,137.36	-669.41	1,337.13	Start DLS 10.00 TFO 152.20
8,327.84	7,824.00	-749.26	777.15	Start 5123.95 hold at 8327.84 MD
13,451.79	7,824.00	-799.54	-4,346.56	Start DLS 2.00 TFO 90.00
13,501.57	7,824.00	-799.59	-4,396.34	Start 7704.70 hold at 13501.57 MD
21,206.27	7,824.00	-741.31	-12,100.82	TD at 21206.27