

Pathfinder

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Midland, Texas, 79706
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July 27, 2012

RECEIVED
RRC OF TEXAS

JUL 31 2012

O&G
AUSTIN TX

PATHFINDER
A Schlumberger Company

**RAILROAD COMMISSION OF TEXAS
OIL & GAS DIVISION
1701 N. CONGRESS
AUSTIN, TX 78701
ATTENTION: DIANE CRUM**

VIA FEDERAL EXPRESS

**RE: Chesapeake Operating
University 19-19 #2H
RRC Lease/Gas ID No. Not Assigned
Phantom (Wolfcamp)
Loving County, TX
Abstract No.: N/A
Well Plat Survey Co.: UL
API No.: 42-301-31709
PES File No.: 12MLD0175**

Dear Ms. Crum:

Enclosed, please find the original and one copy of the survey performed on the referenced well by PathFinder Energy Services (P-5 No. 643292). Other information required by your office is as follows:

<u>Name & Title of Surveyor</u>	<u>Drainhole Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Charlie Sandifer Field Engineer	Original Hole	153 - 15,884	5/09/12 to 6/15/12	Gamma-Ray

A certified plat on which the bottom hole location is oriented both to the surface location and to the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the address and phone number listed above.


JUAN ALCOCER
M/LWD Service Coordinator

RM:ll
Enclosures

cc:Chesapeake Operating.

PathFinder Energy Services, Inc.

Survey Report

CHESAPEAKE OPERATING
UNIVERSITY 19-19 #2H/ API# 42-301-31709
LOVING COUNTY, TX
Rig:TRINIDAD 102

PathFinder Office Supervisor: JUAN ALCOCER
PathFinder Field Engineers: C. SANDIFER
H. SANDIFER
O. BARCELLATA

K. THURMAN

Survey Calculations by RX5 V6.04A using Minimum Curvature

Survey Horiz. Reference:WELLHEAD
Ref Coordinates: LAT:31.40.21.1524 N LON:103.23.33.9814 W
GRID Reference:NAD27 texas central Lambert
Ref GRID Coord: X: 1048316.0000 Y: 742614.0000
North Aligned To:GRID NORTH
Total Magnetic Correction: 8.93° EAST TO GRID
Vertical Section Plane: 343.71
Survey Vert. Reference: 25.00' Rotary Table To Ground
Altitude:2813.00' Ground To MSL

Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
ORIGIN OF WELL SURFACE										
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00@	0.00	0.00
THE FOLLOWING ARE PATHFINDER MWD SURVEYS										
153.00	0.88	127.67	152.99	153.00	-0.95	0.72 S	0.93 E	1.17@	127.67	0.57
328.00	1.06	170.74	327.97	175.00	-3.64	3.14 S	2.25 E	3.86@	144.30	0.42
514.00	1.41	192.71	513.93	186.00	-7.35	7.07 S	2.03 E	7.35@	163.99	0.31
694.00	2.11	208.09	693.84	180.00	-11.66	12.15 S	0.02 W	12.15@	180.09	0.47
874.00	2.99	217.49	873.66	180.00	-16.80	18.80 S	4.44 W	19.32@	193.28	0.54
1054.00	3.52	209.58	1053.37	180.00	-23.42	27.33 S	10.02 W	29.11@	200.14	0.39
1144.00	2.20	213.19	1143.26	90.00	-26.47	31.18 S	12.33 W	33.53@	201.58	1.48
1234.00	2.11	213.28	1233.20	90.00	-28.66	34.01 S	14.19 W	36.85@	202.64	0.10
1415.00	3.08	211.34	1414.01	181.00	-34.10	40.95 S	18.54 W	44.95@	204.36	0.54
1595.00	3.87	211.52	1593.68	180.00	-41.44	50.26 S	24.24 W	55.80@	205.74	0.44
1775.00	2.81	209.67	1773.37	180.00	-48.59	59.27 S	29.60 W	66.25@	206.53	0.59
1956.00	3.34	211.52	1954.11	181.00	-55.21	67.62 S	34.55 W	75.93@	207.06	0.30
2136.00	4.57	215.56	2133.68	180.00	-63.16	77.92 S	41.46 W	88.27@	208.02	0.70
2316.00	1.58	200.18	2313.40	180.00	-69.59	86.09 S	46.49 W	97.84@	208.37	1.71
2496.00	1.14	111.15	2493.36	180.00	-72.68	89.06 S	45.67 W	100.09@	207.15	1.07
2676.00	1.58	97.08	2673.31	180.00	-74.75	90.01 S	41.54 W	99.14@	204.77	0.31
2856.00	2.55	87.59	2853.19	180.00	-76.69	90.15 S	35.08 W	96.74@	201.26	0.57
2947.00	2.99	86.01	2944.09	91.00	-77.68	89.90 S	30.69 W	94.99@	198.85	0.49
3037.00	3.43	86.36	3033.95	90.00	-78.77	89.57 S	25.66 W	93.17@	195.99	0.49
3217.00	1.41	52.70	3213.78	180.00	-79.16	87.88 S	18.52 W	89.81@	191.90	1.33
3397.00	2.11	43.91	3393.70	180.00	-76.72	84.15 S	14.46 W	85.39@	189.75	0.42

PathFinder Energy Services, Inc.

Survey Report

CHESAPEAKE OPERATING
UNIVERSITY 19-19 #2H/ API# 42-301-31709
LOVING COUNTY, TX
RIG:TRINIDAD 102

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
3577.00	2.81	46.11	3573.53	180.00	-73.03	78.71 S	8.98 W	79.22@	186.51	0.39
3757.00	3.87	47.87	3753.22	180.00	-68.34	71.57 S	1.30 W	71.59@	181.04	0.59
3937.00	3.34	1.37	3932.90	180.00	-60.69	62.26 S	3.33 E	62.34@	176.94	1.60
4117.00	1.58	35.65	4112.74	180.00	-54.16	55.00 S	4.90 E	55.21@	174.90	1.23
4297.00	2.02	54.46	4292.65	180.00	-51.59	51.14 S	8.93 E	51.91@	170.09	0.41
4477.00	2.64	54.63	4472.50	180.00	-49.19	46.89 S	14.89 E	49.20@	162.38	0.34
4657.00	4.04	65.88	4652.19	180.00	-46.97	41.90 S	24.06 E	48.32@	150.13	0.86
4836.00	5.01	59.29	4830.63	179.00	-44.16	35.33 S	36.54 E	50.83@	134.04	0.61
4981.00	3.78	58.24	4975.20	145.00	-41.31	29.58 S	46.04 E	54.73@	122.72	0.85
5107.00	3.43	51.38	5100.96	126.00	-38.77	25.04 S	52.52 E	58.19@	115.49	0.44
5197.00	1.93	29.50	5190.86	90.00	-36.69	22.04 S	55.37 E	59.60@	111.71	1.99
5287.00	2.55	339.75	5280.80	90.00	-33.64	18.85 S	55.42 E	58.54@	108.78	2.18
5377.00	2.29	345.90	5370.71	90.00	-29.84	15.22 S	54.29 E	56.39@	105.66	0.41
5467.00	2.02	347.49	5460.65	90.00	-26.46	11.93 S	53.51 E	54.83@	102.57	0.31
5558.00	2.11	345.90	5551.59	91.00	-23.19	8.74 S	52.76 E	53.47@	99.41	0.12
5738.00	2.02	345.67	5731.48	180.00	-16.71	2.45 S	51.16 E	51.22@	92.75	0.05
5919.00	2.11	349.82	5912.36	181.00	-10.21	3.92 N	49.78 E	49.94@	85.50	0.10
6098.00	1.85	349.89	6091.25	179.00	-4.06	10.00 N	48.70 E	49.71@	78.39	0.14
6188.00	1.85	351.24	6181.20	90.00	-1.17	12.87 N	48.22 E	49.91@	75.06	0.05
6278.00	1.67	350.25	6271.16	90.00	1.57	15.60 N	47.78 E	50.26@	71.92	0.20
6368.00	2.11	346.97	6361.11	90.00	4.53	18.50 N	47.18 E	50.68@	68.58	0.50
6459.00	1.76	346.36	6452.06	91.00	7.60	21.50 N	46.47 E	51.20@	65.18	0.39
6548.00	1.85	348.53	6541.02	89.00	10.39	24.23 N	45.86 E	51.87@	62.15	0.13
6728.00	1.67	334.35	6720.93	180.00	15.88	29.44 N	44.15 E	53.07@	56.30	0.26
6908.00	1.14	335.67	6900.88	180.00	20.24	33.44 N	42.28 E	53.90@	51.66	0.30
7089.00	1.14	341.73	7081.84	181.00	23.82	36.79 N	40.97 E	55.07@	48.08	0.07
7269.00	0.88	321.38	7261.81	180.00	26.89	39.57 N	39.55 E	55.94@	44.98	0.24

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Survey Report

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UNIVERSITY 19-19 #2H/ API# 42-301-31709
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RIG:TRINIDAD 102

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
7449.00	0.35	357.78	7441.80	180.00	28.70	41.20 N	38.66 E	56.50@	43.18	0.35
7629.00	0.44	30.90	7621.80	180.00	29.70	42.34 N	39.00 E	57.56@	42.65	0.13
7808.00	0.62	57.57	7800.79	179.00	30.44	43.45 N	40.17 E	59.17@	42.75	0.17
7988.00	0.26	90.04	7980.79	180.00	30.59	43.97 N	41.40 E	60.39@	43.27	0.24
8169.00	0.70	101.73	8161.78	181.00	29.96	43.75 N	42.89 E	61.27@	44.43	0.25
8349.00	0.09	154.94	8341.77	180.00	29.30	43.40 N	44.03 E	61.82@	45.41	0.36
8528.00	0.35	77.99	8520.77	179.00	29.12	43.38 N	44.62 E	62.24@	45.81	0.19
8705.00	0.18	19.13	8697.77	177.00	29.31	43.76 N	45.24 E	62.94@	45.96	0.17
8883.00	0.70	9.37	8875.77	178.00	30.52	45.09 N	45.51 E	64.07@	45.26	0.29
9063.00	1.23	14.99	9055.74	180.00	33.16	48.05 N	46.19 E	66.65@	43.87	0.30
9244.00	2.55	356.10	9236.64	181.00	38.75	53.94 N	46.42 E	71.16@	40.71	0.80
9424.00	2.02	275.94	9416.53	180.00	43.87	58.26 N	42.99 E	72.41@	36.42	1.65
9604.00	2.46	274.01	9596.40	180.00	46.41	58.86 N	35.98 E	68.99@	31.44	0.25
9784.00	1.85	247.38	9776.27	180.00	47.43	58.01 N	29.45 E	65.06@	26.91	0.64
9965.00	1.58	219.25	9957.19	181.00	45.69	54.96 N	25.17 E	60.45@	24.61	0.48
10145.00	1.93	227.07	10137.11	180.00	42.93	50.97 N	21.38 E	55.27@	22.76	0.24
10325.00	2.55	240.17	10316.97	180.00	40.63	46.92 N	15.69 E	49.47@	18.49	0.45
10505.00	2.37	240.96	10496.81	180.00	38.87	43.12 N	8.96 E	44.04@	11.74	0.10
10685.00	2.55	255.02	10676.64	180.00	38.14	40.28 N	1.84 E	40.32@	2.61	0.35
10822.00	2.37	250.45	10813.52	137.00	38.05	38.54 N	3.78 W	38.72@	354.40	0.19
10851.00	2.55	254.50	10842.49	29.00	38.03	38.17 N	4.96 W	38.49@	352.59	0.86
10896.00	3.25	279.81	10887.43	45.00	38.60	38.12 N	7.18 W	38.79@	349.33	3.20
10941.00	7.56	323.49	10932.24	45.00	41.94	40.72 N	10.20 W	41.98@	345.93	12.60
10986.00	14.16	338.17	10976.42	45.00	50.21	48.21 N	14.02 W	50.21@	343.79	15.79
11031.00	20.84	344.58	11019.31	45.00	63.71	61.06 N	18.20 W	63.71@	343.40	15.43
11075.00	28.05	346.78	11059.34	44.00	81.89	78.70 N	22.65 W	81.89@	343.94	16.51
11121.00	35.17	347.75	11098.49	46.00	105.94	102.20 N	27.94 W	105.95@	344.71	15.52

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Survey Report

CHESAPEAKE OPERATING
UNIVERSITY 19-19 #2H/ API# 42-301-31709
LOVING COUNTY, TX
RIG:TRINIDAD 102

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets (ft) (ft)		Closure Dist Dir (ft) (deg)		DLS (dg/100ft)
11166.00	42.65	347.75	11133.48	45.00	134.11	129.80 N	33.93 W	134.17@	345.35	16.62
11211.00	48.72	348.01	11164.91	45.00	166.21	161.27 N	40.69 W	166.32@	345.84	13.50
11256.00	50.21	348.19	11194.15	45.00	200.31	194.73 N	47.74 W	200.50@	346.23	3.33
11301.00	51.09	348.28	11222.68	45.00	235.00	228.80 N	54.83 W	235.28@	346.52	1.96
11346.00	51.79	348.19	11250.73	45.00	270.07	263.25 N	62.01 W	270.45@	346.75	1.56
11391.00	52.76	348.28	11278.27	45.00	305.56	298.09 N	69.27 W	306.04@	346.92	2.16
11436.00	58.74	348.28	11303.58	45.00	342.62	334.50 N	76.82 W	343.21@	347.07	13.29
11481.00	65.51	347.57	11324.61	45.00	382.27	373.37 N	85.14 W	382.96@	347.15	15.11
11526.00	69.47	346.87	11341.84	45.00	423.75	413.90 N	94.34 W	424.52@	347.16	8.92
11571.00	74.57	346.15	11355.72	45.00	466.49	455.51 N	104.33 W	467.31@	347.10	11.44
11616.00	77.91	346.44	11366.42	45.00	510.15	497.97 N	114.68 W	511.00@	347.03	7.45
11661.00	79.40	345.81	11375.28	45.00	554.23	540.80 N	125.26 W	555.12@	346.96	3.58
11706.00	84.94	346.11	11381.40	45.00	598.75	584.03 N	136.07 W	599.67@	346.89	12.33
11784.00	91.01	346.78	11384.16	78.00	676.58	659.78 N	154.33 W	677.59@	346.83	7.83
11815.00	91.10	346.34	11383.59	31.00	707.54	689.92 N	161.53 W	708.58@	346.82	1.45
11846.00	91.10	346.25	11382.99	31.00	738.50	720.04 N	168.88 W	739.57@	346.80	0.29
11941.00	89.43	344.76	11382.55	95.00	833.44	812.00 N	192.65 W	834.55@	346.65	2.36
12035.00	87.67	345.02	11384.93	94.00	927.39	902.72 N	217.15 W	928.47@	346.47	1.89
12129.00	88.11	344.85	11388.39	94.00	1021.31	993.43 N	241.56 W	1022.38@	346.33	0.50
12224.00	89.16	344.94	11390.66	95.00	1116.26	1085.12 N	266.31 W	1117.32@	346.21	1.11
12319.00	90.75	345.46	11390.73	95.00	1211.22	1176.96 N	290.58 W	1212.30@	346.13	1.76
12413.00	88.99	345.48	11390.94	94.00	1305.17	1267.95 N	314.16 W	1306.29@	346.08	1.87
12508.00	90.04	345.71	11391.75	95.00	1400.12	1359.96 N	337.79 W	1401.29@	346.05	1.13
12602.00	90.66	346.08	11391.17	94.00	1494.05	1451.13 N	360.70 W	1495.28@	346.04	0.77
12697.00	89.43	346.41	11391.10	95.00	1588.95	1543.40 N	383.29 W	1590.28@	346.05	1.34
12791.00	88.90	345.19	11392.47	94.00	1682.88	1634.52 N	406.34 W	1684.27@	346.04	1.41
12886.00	91.89	345.06	11391.81	95.00	1777.84	1726.32 N	430.73 W	1779.24@	345.99	3.15

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12980.00	91.89	345.31	11388.71	94.00	1871.75	1817.15 N	454.75 W	1873.18@	345.95	0.27
13074.00	91.45	345.31	11385.97	94.00	1965.68	1908.03 N	478.58 W	1967.14@	345.92	0.47
13169.00	91.01	345.30	11383.93	95.00	2060.62	1999.91 N	502.67 W	2062.11@	345.89	0.46
13263.00	91.10	343.70	11382.20	94.00	2154.59	2090.47 N	527.79 W	2156.07@	345.83	1.70
13357.00	89.96	342.63	11381.33	94.00	2248.58	2180.43 N	555.01 W	2249.96@	345.72	1.66
13451.00	90.04	342.00	11381.33	94.00	2342.55	2269.99 N	583.56 W	2343.80@	345.58	0.68
13544.00	90.31	342.03	11381.05	93.00	2435.51	2358.44 N	612.28 W	2436.63@	345.45	0.29
13638.00	90.22	341.91	11380.62	94.00	2529.46	2447.83 N	641.37 W	2530.46@	345.32	0.16
13732.00	90.31	341.70	11380.18	94.00	2623.41	2537.13 N	670.73 W	2624.29@	345.19	0.24
13826.00	89.69	341.49	11380.18	94.00	2717.35	2626.32 N	700.40 W	2718.11@	345.07	0.70
13920.00	89.60	341.40	11380.76	94.00	2811.27	2715.43 N	730.32 W	2811.93@	344.95	0.14
14013.00	89.25	341.51	11381.70	93.00	2904.20	2803.60 N	759.89 W	2904.75@	344.83	0.39
14107.00	90.04	341.21	11382.28	94.00	2998.11	2892.66 N	789.94 W	2998.58@	344.73	0.90
14201.00	89.87	341.06	11382.35	94.00	3092.02	2981.61 N	820.33 W	3092.41@	344.62	0.24
14295.00	89.69	340.33	11382.71	94.00	3185.89	3070.33 N	851.41 W	3186.19@	344.50	0.80
14389.00	89.78	340.24	11383.15	94.00	3279.72	3158.82 N	883.12 W	3279.94@	344.38	0.14
14482.00	89.60	340.34	11383.65	93.00	3372.55	3246.37 N	914.48 W	3372.71@	344.27	0.22
14576.00	89.25	340.48	11384.59	94.00	3466.39	3334.92 N	946.00 W	3466.50@	344.16	0.40
14670.00	89.96	340.15	11385.24	94.00	3560.22	3423.43 N	977.66 W	3560.29@	344.06	0.83
14764.00	90.75	339.00	11384.66	94.00	3653.97	3511.51 N	1010.46 W	3654.00@	343.95	1.48
14859.00	91.36	338.82	11382.91	95.00	3748.62	3600.13 N	1044.64 W	3748.63@	343.82	0.67
14953.00	91.28	339.76	11380.75	94.00	3842.32	3688.03 N	1077.87 W	3842.32@	343.71	1.00
15047.00	90.84	338.47	11379.01	94.00	3936.00	3775.84 N	1111.38 W	3936.00@	343.60	1.45
15141.00	91.36	337.16	11377.20	94.00	4029.48	3862.86 N	1146.86 W	4029.52@	343.46	1.50
15235.00	91.80	336.48	11374.61	94.00	4122.77	3949.24 N	1183.85 W	4122.86@	343.31	0.86
15330.00	91.80	335.89	11371.63	95.00	4216.90	4036.11 N	1222.19 W	4217.10@	343.15	0.62
15424.00	88.81	337.05	11371.13	94.00	4310.14	4122.28 N	1259.71 W	4310.46@	343.01	3.41

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RIG:TRINIDAD 102

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Measured Depth (ft)	Incl (deg)	Drift Dir. (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	TOTAL Rectangular Offsets		Closure Dist Dir		DLS
						(ft)	(ft)	(ft)	(deg)	(dg/100ft)
15518.00	89.08	337.32	11372.86	94.00	4403.51	4208.91 N	1296.15 W	4403.97@	342.88	0.41
15613.00	89.34	337.27	11374.17	95.00	4497.91	4296.54 N	1332.82 W	4498.52@	342.77	0.28
15707.00	89.52	337.18	11375.10	94.00	4591.30	4383.21 N	1369.21 W	4592.08@	342.65	0.21
15801.00	89.69	336.86	11375.75	94.00	4684.66	4469.75 N	1405.90 W	4685.64@	342.54	0.39
15884.00	89.60	336.34	11376.26	83.00	4767.02	4545.92 N	1438.87 W	4768.20@	342.44	0.64
STRAIGHT LINE PROJECTION TO BIT DEPTH AT 15935' MD.										
15935.00	89.60	336.34	11376.62	51.00	4817.60	4592.63 N	1459.33 W	4818.91@	342.37	0.00



LEASE NAME & WELL NO.:
UNIVERSITY 19-19 #2H

TOPOGRAPHY & VEGETATION:
NATURAL MESQUITE PASTURE

NEAREST TOWN IN COUNTY:
±12.4 MILES EAST OF MENTONE, TEXAS

DESCRIPTION:
SECTION 19, BLOCK 19, UNIVERSITY LAND SURVEY
LOVING COUNTY, TEXAS

This location has been very carefully staked on the ground according to the best official survey records, maps, and other data available to us. This plat does not in any way represent a "Boundary Survey", and does not comply with correct I.B.P.L.S. Minimum Standards of Procedures for Boundary Surveys.

CERTIFICATION:



William J. Keating
Texas Reg. No. 5041

I, William J. Keating, a Registered Professional Land Surveyor, and an authorized agent of Topographic Land Surveyors, do hereby certify that the above described well location was surveyed and staked on the ground as shown herein. This plat is for Texas Railroad Commission permitting only.

TOPOGRAPHIC
SURVEYING • MAPPING • GIS • GPS

2903 N. BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1853 • (800) 767-1853 • FAX: (432) 682-1743



Surface Hole Location:

250' FSL & 738' FWL
SHL Ground Elevation 2813'
X = 1344780 Y = 10585190
LAT.: N 31.6726714 LONG.: W 103.3932248
NAD 83 TX-C ZONE
X = 1048316 Y = 742614
LAT.: N 31.6725415 LONG.: W 103.3927738

Bottom Hole Location:

200' FNL & 738' FWL
X = 1046959 Y = 747258
LAT.: N 31.6852012 LONG.: W 103.3975443
NAD 83 TX-C ZONE
X = 1343423 Y = 10589834
LAT.: N 31.6853309 LONG.: W 103.3979957

All Coordinates are in NAD 27 TX-C Zone unless otherwise noted.

LEGEND:

—X— Fence
—E— Powerline
—W— Water Line
—P— Pipeline
===== Lease Road

ORIGINAL DOC. SIZE: 8.5"x14"

SCALE: 1" = 1000'

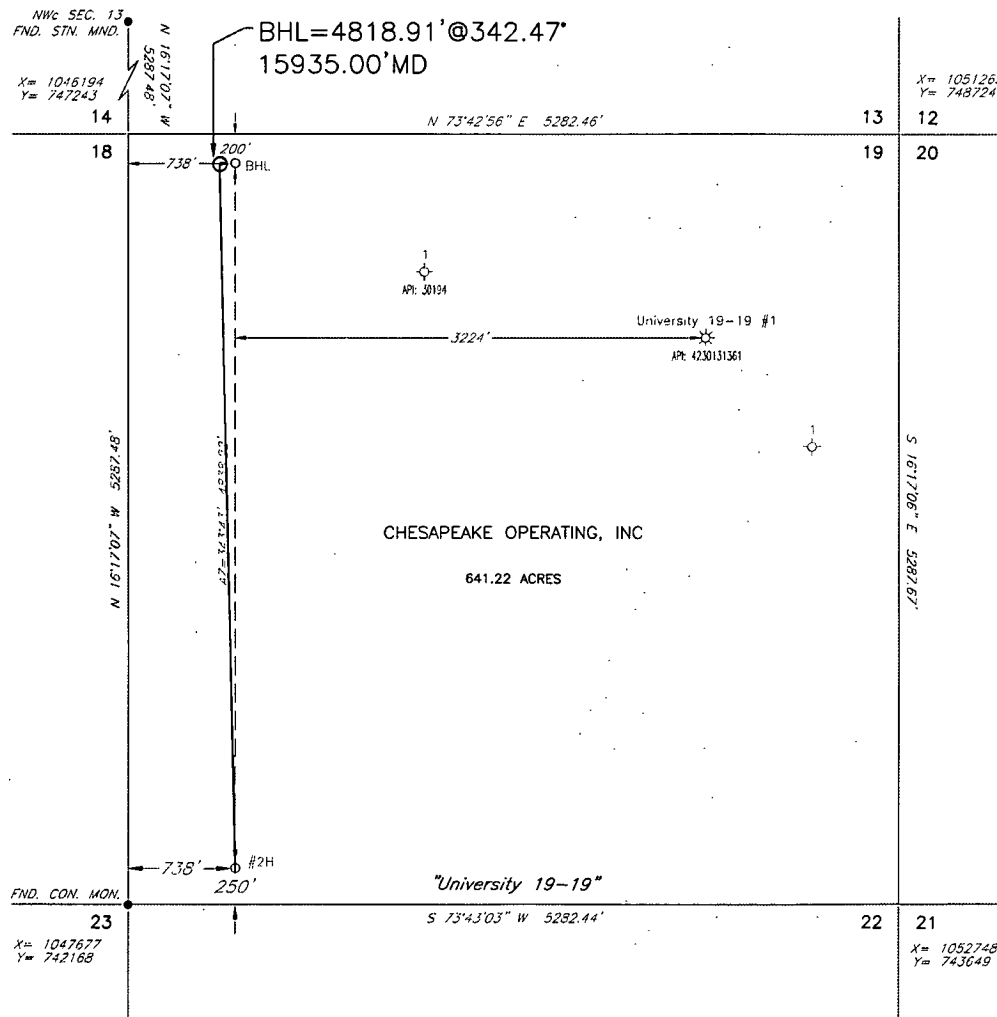
DATE: DECEMBER 27, 2011

COGO: 627-71298_NAD27

LO_UNIVERSITY_19_19_2H

INV. #: 176685

DRAWN BY: BSK



**NOTE: Wells spotted from information provided by Chesapeake Operating, Inc and the Texas Railroad Commission.