

30.015-44530

Job Number: 2018-381-32
 Company: Total Directional Services
 Lease/Well: Alpha SWD # 2
 Location: Sec 18, Township 23 S, Range 28 E
 Rig Name: Frontier 32
 RKB: 3079
 G.L. or M.S.L.: GL 3051

State/Country: Eddy Co. NM
 Declination: 7.11
 Grid: True North
 File name: C:\WINSERVE\ALPHA2.SVY
 Date/Time: 30-Oct-18 / 10:58
 Curve Name: ALPHA #2

ALPHA #2

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane .00
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

NM OIL CONSERVATION
 ARTESIA DISTRICT

MAR 07 2019

RECEIVED

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
212.00	.20	89.00	212.00	.01	.37	.01	.37	89.00	.09
275.00	.40	22.40	275.00	.21	.56	.21	.60	69.42	.59
339.00	.50	35.70	339.00	.65	.81	.65	1.04	51.53	.22
433.00	.50	322.50	432.99	1.30	.80	1.30	1.53	31.59	.63
set 20 inch 94# J55 Casing @ 502ft									
559.00	1.10	279.20	558.98	1.93	-.73	1.93	2.07	339.39	.64
622.00	.90	273.60	621.97	2.06	-1.82	2.06	2.75	318.58	.35
717.00	.80	269.90	716.96	2.11	-3.23	2.11	3.85	303.15	.12
813.00	.80	316.40	812.95	2.59	-4.36	2.59	5.07	300.73	.66
908.00	.50	279.90	907.95	3.14	-5.22	3.14	6.10	301.03	.52
1003.00	.40	306.50	1002.95	3.41	-5.90	3.41	6.81	300.04	.24
1098.00	.40	303.10	1097.94	3.79	-6.44	3.79	7.47	300.46	.02
1193.00	.50	229.70	1192.94	3.70	-7.04	3.70	7.95	297.75	.57
1288.00	.40	208.60	1287.94	3.14	-7.51	3.14	8.14	292.70	.20
1383.00	.70	239.80	1382.93	2.56	-8.17	2.56	8.56	287.39	.44
1478.00	.40	237.10	1477.93	2.09	-8.95	2.09	9.19	283.13	.32
1573.00	.50	196.50	1572.93	1.51	-9.35	1.51	9.47	279.18	.34
1668.00	1.30	131.00	1667.92	.41	-8.65	.41	8.66	272.68	1.25
1763.00	1.70	120.60	1762.88	-1.02	-6.63	-1.02	6.70	261.26	.51
1858.00	1.80	125.40	1857.84	-2.60	-4.20	-2.60	4.94	238.22	.19
1954.00	2.20	119.60	1953.78	-4.38	-1.37	-4.38	4.59	197.31	.47
2049.00	2.00	117.40	2048.72	-6.05	1.69	-6.05	6.28	164.38	.23
2144.00	2.20	113.80	2143.65	-7.55	4.83	-7.55	8.96	147.37	.25
2239.00	1.40	112.50	2238.60	-8.73	7.57	-8.73	11.55	139.05	.84

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
2335.00	.40	119.80	2334.59	-9.34	8.95	-9.34	12.93	136.24	1.05
2430.00	.40	126.30	2429.59	-9.70	9.50	-9.70	13.58	135.60	.05
2523.00	.50	97.70	2522.59	-9.95	10.16	-9.95	14.22	134.39	.26
2618.00	.60	48.10	2617.58	-9.67	10.95	-9.67	14.61	131.47	.49
2713.00	.30	39.20	2712.58	-9.15	11.47	-9.15	14.67	128.57	.32
2808.00	.20	38.40	2807.58	-8.82	11.73	-8.82	14.68	126.95	.11
2903.00	.20	36.10	2902.58	-8.56	11.93	-8.56	14.69	125.65	.01
2998.00	.20	309.40	2997.58	-8.32	11.90	-8.32	14.52	124.96	.29
3093.00	.10	339.00	3092.58	-8.14	11.75	-8.14	14.29	124.72	.13
3188.00	.10	358.20	3187.58	-7.98	11.71	-7.98	14.17	124.26	.04
3282.00	.10	339.00	3281.58	-7.82	11.68	-7.82	14.06	123.80	.04
3379.00	.20	248.00	3378.58	-7.80	11.49	-7.80	13.89	124.18	.23
3474.00	.10	210.70	3473.58	-7.94	11.30	-7.94	13.81	125.09	.14
3569.00	.10	258.40	3568.58	-8.03	11.17	-8.03	13.76	125.69	.09
3664.00	.00	107.20	3663.58	-8.04	11.09	-8.04	13.70	125.94	.11
3760.00	.10	101.20	3759.58	-8.06	11.18	-8.06	13.78	125.80	.10
3854.00	.00	21.10	3853.58	-8.07	11.26	-8.07	13.85	125.65	.11
3949.00	.00	331.80	3948.58	-8.07	11.26	-8.07	13.85	125.65	.00
4044.00	.10	27.50	4043.58	-8.00	11.29	-8.00	13.84	125.32	.11
4139.00	.10	132.40	4138.58	-7.98	11.39	-7.98	13.91	125.02	.17
4234.00	.10	50.30	4233.58	-7.99	11.52	-7.99	14.02	124.74	.14
4329.00	.10	82.50	4328.58	-7.92	11.66	-7.92	14.10	124.18	.06
4424.00	.10	269.80	4423.58	-7.91	11.66	-7.91	14.09	124.15	.21
4519.00	.10	299.00	4518.58	-7.87	11.51	-7.87	13.94	124.37	.05
4614.00	.10	226.70	4613.58	-7.89	11.38	-7.89	13.84	124.74	.12
4709.00	.20	258.10	4708.58	-7.98	11.15	-7.98	13.71	125.58	.13
4804.00	.10	290.30	4803.58	-7.99	10.91	-7.99	13.52	126.19	.13
4899.00	.00	198.20	4898.58	-7.96	10.84	-7.96	13.44	126.29	.11
4995.00	.00	51.70	4994.58	-7.96	10.84	-7.96	13.44	126.29	.00
5090.00	.20	304.90	5089.57	-7.86	10.70	-7.86	13.28	126.31	.21
5185.00	.10	297.80	5184.57	-7.73	10.49	-7.73	13.03	126.38	.11
5280.00	.10	250.00	5279.57	-7.72	10.34	-7.72	12.90	126.74	.09
5375.00	.10	290.40	5374.57	-7.72	10.18	-7.72	12.78	127.16	.07
5470.00	.20	224.40	5469.57	-7.81	9.99	-7.81	12.68	128.01	.19
5565.00	.10	222.50	5564.57	-7.99	9.82	-7.99	12.66	129.13	.11
5660.00	.00	251.30	5659.57	-8.05	9.76	-8.05	12.65	129.50	.11
5755.00	.10	290.90	5754.57	-8.02	9.68	-8.02	12.57	129.62	.11
5850.00	.10	173.20	5849.57	-8.07	9.62	-8.07	12.55	130.01	.18
5945.00	.10	266.90	5944.57	-8.16	9.54	-8.16	12.56	130.52	.15
6041.00	.10	104.80	6040.57	-8.18	9.54	-8.18	12.57	130.62	.21
6136.00	.30	20.50	6135.57	-7.97	9.71	-7.97	12.56	129.39	.32
6231.00	.60	330.80	6230.57	-7.30	9.55	-7.30	12.03	127.40	.49
6326.00	.70	326.90	6325.56	-6.38	8.99	-6.38	11.03	125.37	.12
6421.00	.60	289.50	6420.56	-5.73	8.21	-5.73	10.01	124.93	.45
6516.00	.80	303.60	6515.55	-5.20	7.19	-5.20	8.87	125.89	.28

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
6611.00	1.20	297.30	6610.54	-4.38	5.75	-4.38	7.23	127.27	.44
6706.00	.70	306.60	6705.52	-3.57	4.40	-3.57	5.67	129.09	.55
6801.00	.30	335.20	6800.52	-3.00	3.83	-3.00	4.87	128.09	.48
6896.00	.30	305.00	6895.52	-2.63	3.52	-2.63	4.40	126.79	.16
6991.00	.40	257.80	6990.52	-2.56	2.99	-2.56	3.94	130.55	.31
7086.00	.20	288.20	7085.52	-2.58	2.51	-2.58	3.60	135.76	.26
7181.00	.30	310.30	7180.51	-2.37	2.16	-2.37	3.21	137.55	.14
7268.00	.20	350.30	7267.51	-2.07	1.97	-2.07	2.85	136.48	.22
7363.00	.40	355.90	7362.51	-1.58	1.91	-1.58	2.48	129.46	.21
7458.00	.50	313.00	7457.51	-.96	1.59	-.96	1.86	121.22	.36
7554.00	.60	304.40	7553.51	-.39	.87	-.39	.95	114.37	.13
7649.00	.60	313.30	7648.50	.23	.09	.23	.25	22.14	.10
7744.00	.40	299.20	7743.50	.73	-.56	.73	.92	322.71	.25
7839.00	.40	326.70	7838.49	1.17	-1.03	1.17	1.56	318.70	.20
7933.00	.30	342.00	7932.49	1.68	-1.29	1.68	2.12	322.57	.14
8029.00	.30	324.00	8028.49	2.12	-1.51	2.12	2.61	324.55	.10
8124.00	.30	312.40	8123.49	2.49	-1.84	2.49	3.10	323.54	.06
8219.00	.20	89.70	8218.49	2.66	-1.86	2.66	3.24	325.05	.49
8314.00	.60	76.80	8313.49	2.77	-1.21	2.77	3.03	336.46	.43
8409.00	.70	81.30	8408.48	2.98	-.15	2.98	2.98	357.10	.12
8504.00	.80	109.10	8503.47	2.85	1.05	2.85	3.03	20.24	.39
8600.00	.90	115.90	8599.46	2.30	2.36	2.30	3.29	45.78	.15
8694.00	1.00	107.10	8693.45	1.73	3.81	1.73	4.19	65.52	.19
8789.00	1.00	114.90	8788.44	1.14	5.35	1.14	5.47	77.96	.14
8885.00	1.00	117.00	8884.42	.41	6.86	.41	6.87	86.59	.04
8980.00	.90	117.20	8979.41	-.31	8.26	-.31	8.27	92.14	.11
9075.00	.70	107.80	9074.40	-.83	9.48	-.83	9.51	94.99	.25
note									
9170.00	.80	103.30	9169.39	-1.16	10.68	-1.16	10.74	96.19	.12
9204.00	.50	105.10	9203.39	-1.25	11.05	-1.25	11.12	96.46	.88
9354.00	.80	53.60	9353.38	-.80	12.52	-.80	12.55	93.65	.42
9448.00	.60	72.50	9447.37	-.26	13.52	-.26	13.53	91.11	.32
9543.00	.30	134.70	9542.37	-.29	14.17	-.29	14.18	91.16	.56
9639.00	.70	197.10	9638.37	-1.03	14.18	-1.03	14.22	94.13	.65
9734.00	1.50	208.50	9733.35	-2.67	13.42	-2.67	13.68	101.27	.87
9829.00	1.50	213.60	9828.32	-4.80	12.13	-4.80	13.05	111.59	.14
9924.00	1.10	214.10	9923.29	-6.59	10.94	-6.59	12.77	121.08	.42
10019.00	.90	212.90	10018.28	-7.97	10.02	-7.97	12.80	128.51	.21
10115.00	.90	208.90	10114.26	-9.27	9.24	-9.27	13.09	135.07	.07
10210.00	.80	204.80	10209.25	-10.52	8.61	-10.52	13.59	140.72	.12
10304.00	.80	224.60	10303.25	-11.58	7.87	-11.58	14.00	145.81	.29
10399.00	.90	229.80	10398.23	-12.54	6.83	-12.54	14.28	151.41	.13
10494.00	.80	243.10	10493.22	-13.32	5.67	-13.32	14.48	156.93	.23
10589.00	.60	255.90	10588.22	-13.74	4.60	-13.74	14.49	161.49	.27
10684.00	.30	282.70	10683.21	-13.81	3.87	-13.81	14.34	164.33	.38
10779.00	.20	353.70	10778.21	-13.59	3.61	-13.59	14.06	165.11	.32

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E Distance FT	Direction Deg	Dogleg Severity Deg/100
10875.00	.30	60.40	10874.21	-13.30	3.81	-13.30	13.83	164.00	.30
10970.00	.40	44.40	10969.21	-12.94	4.26	-12.94	13.62	161.77	.15
11064.00	.50	25.70	11063.21	-12.33	4.67	-12.33	13.19	159.26	.19
11160.00	.80	34.10	11159.20	-11.40	5.23	-11.40	12.54	155.37	.33
11255.00	.80	.80	11254.19	-10.19	5.61	-10.19	11.63	151.17	.48
11350.00	.60	4.80	11349.19	-9.03	5.66	-9.03	10.66	147.93	.22
11445.00	.60	13.50	11444.18	-8.05	5.82	-8.05	9.93	144.15	.10
11541.00	.60	5.60	11540.18	-7.06	5.98	-7.06	9.26	139.73	.09
11636.00	.60	.90	11635.17	-6.07	6.04	-6.07	8.56	135.14	.05
11730.00	.50	15.10	11729.17	-5.18	6.15	-5.18	8.04	130.10	.18
11825.00	.40	20.60	11824.16	-4.47	6.38	-4.47	7.79	125.03	.11
11920.00	.50	22.20	11919.16	-3.78	6.65	-3.78	7.65	119.59	.11
12015.00	.70	1.50	12014.16	-2.81	6.82	-2.81	7.38	112.40	.31
12110.00	.60	17.60	12109.15	-1.76	6.99	-1.76	7.21	104.12	.22
12205.00	.90	33.50	12204.14	-.66	7.55	-.66	7.58	95.01	.38
12301.00	.90	30.80	12300.13	.61	8.35	.61	8.38	85.79	.04
12395.00	.80	23.80	12394.12	1.85	9.00	1.85	9.18	78.39	.15
12491.00	1.00	32.80	12490.11	3.17	9.72	3.17	10.22	71.96	.25
12585.00	1.20	18.40	12584.09	4.79	10.48	4.79	11.52	65.43	.36
12680.00	1.20	354.20	12679.07	6.72	10.69	6.72	12.63	57.83	.53
12774.00	1.10	353.80	12773.05	8.60	10.49	8.60	13.57	50.66	.11
12870.00	1.10	345.20	12869.03	10.41	10.16	10.41	14.54	44.31	.17
12964.00	1.20	335.90	12963.01	12.18	9.52	12.18	15.46	38.03	.22
13059.00	1.30	331.70	13057.99	14.03	8.61	14.03	16.46	31.52	.14
13154.00	1.40	338.30	13152.97	16.06	7.67	16.06	17.80	25.52	.19
13254.00	1.50	316.40	13252.93	18.14	6.31	18.14	19.21	19.19	.56
13344.00	1.50	314.30	13342.90	19.82	4.66	19.82	20.36	13.23	.06
13439.00	1.40	293.70	13437.87	21.15	2.71	21.15	21.33	7.29	.56
13534.00	2.00	276.00	13532.83	21.79	-.01	21.79	21.79	359.98	.83
13564.00	2.50	271.50	13562.81	21.87	-1.18	21.87	21.90	356.91	1.77
13664.00	2.40	270.60	13662.72	21.95	-5.45	21.95	22.61	346.04	.11
13759.00	2.70	264.70	13757.62	21.76	-9.67	21.76	23.81	336.04	.42
13854.00	1.30	236.90	13852.56	20.96	-12.80	20.96	24.56	328.59	1.75
13950.00	1.00	219.60	13948.55	19.72	-14.25	19.72	24.33	324.16	.47
14045.00	.70	202.80	14043.54	18.55	-15.00	18.55	23.86	321.04	.41
14140.00	.50	208.80	14138.53	17.65	-15.43	17.65	23.44	318.85	.22
14235.00	.80	203.80	14233.52	16.68	-15.89	16.68	23.04	316.39	.32
14330.00	1.10	206.70	14328.51	15.26	-16.57	15.26	22.53	312.64	.32
14426.00	1.70	281.30	14424.49	14.72	-18.38	14.72	23.55	308.68	1.84
14520.00	.80	255.70	14518.47	14.83	-20.39	14.83	25.21	306.03	1.10
14615.00	.90	221.10	14613.46	14.10	-21.52	14.10	25.73	303.24	.54
14697.00	.90	221.90	14695.45	13.14	-22.37	13.14	25.94	300.42	.02
Projection to Bit									
14747.00	.90	221.90	14745.44	12.55	-22.90	12.55	26.11	298.73	.00



ALPHA SWD #2



**NM OIL CONSERVATION
ARTESIA DISTRICT**

MAR 07 2019

RECEIVED

TUBULARS						WELL INFORMATION		DIRECTIONS TO SITE		PROPOSED INJECTION INTERVAL			
STRING DETAILS (Size, WPF, Grade, Conn)		HOLE SIZE (in.)	O.D. (in.)	L.D. (in.)	HOLE DEPTH (ft)	SET DEPTH (ft)	LOG: Frontier #32	From Carlsbad, NM: Head south on Hwy 285 travel 10 miles, turn left onto Carrasco Rural Road and location will be on left (south) side 1/4 mile.		Permitted Injection Interval: Skurfan, Fusselman, mile.			
20" 94H J-55 BTC		24	20.000	19.124	502'	472'	API # 30-015-44530						
13.975" GR8 L-80 BTC		17.5	13.375	12.415	2,535'	2,515'	COUNTRY: Egypt						
9.625" 53.5H HCL-80 BTC		12.25	9.625	8.535	9,261'	9,234'	S/W/B: Sec. 18 235 28E						
7.625" 38.08H CL125 HDL/7.625" 39H P110 HDL		8.5	7.625		13,620'	13,593'	LATITUDE: 32.311638						
Open Hole Injection Interval		6.5			14,747'		LONGITUDE: 104.127299	TO DATE: 10/29/2018					
							SPUD DATE: 9/15/2018						
STRING COMPONENTS						GL 3051 KB: 3083		HOLE INFORMATION / GEO TOPS		CEMENT INFO		PROPOSED INJECTION STRING	
COMPONENT	O.D.	L.D.	Top	Bottom			24 " Surface Hole T.D. = 502'		155 bbls, 640 sx of 14.8 ppg 1.357 ft/sk yield		9000' of 7" 26H/ft P110 TCPC Duoline Internally Coated Injection Tubing		
20" Surface Casing Shoe	20.000	19.134		472'			Castile - 890'		Estimated TOC @ Surface				
Weatherford Stage Tool (Top)	11.250	8.500	2,433'	2,435'			Doleware Mtn Group (SH marker) - 2,443'		618 bbls, 1951 sx of 13.7 ppg 1.778 ft/sk yield		4750' of 5-1/2" 17H/ft P110 TCPC Duoline Internally Coated Injection Tubing		
13-9/8" 1st Intermediate Casing Shoe	13.375	12.415		2,515'			Lamar Limestone - 2,447'		Got 174 bbls of cement back to surface				
Weatherford Stage Tool (bottom)	11.250	8.500	5,536'	5,538'			Bell Canyon - 2,483'		Estimated TOC @ Surface		7-5/8" x 5" TCPC Permanent Packer with High Temp Elastomer and full Inconel 925 trim		
Weatherford Annular Casing Packer (ACP)		9.625	5,538'	5,562'			17.5 " 1st Int. Hole T.D. = 2535'		Stage 1 - 245 bbls, 1120sx of 15.6 ppg 1.23 ft/sk yield Displaced with 650 bbls of system mud, bumped plug @ 2000 psi, floats held Got 20 bbls, 91 sx to surface after opening tool and circulating				
7.625" Liner Hanger	8.535		8,767'	8,781'			Cherry Canyon - 3,251'		Stage 2 - 190 bbls, 625 sx of 13.7 ppg 1.71 ft/sk yield Displaced with 391 bbls of DBM, bumped plug @ 1280 psi, tool held psi Got 40 bbls, 130 sx to surface after circulating DBM		7-5/8" x 5" TCPC Permanent Packer with High Temp Elastomer and full Inconel 925 trim		
9-5/8" 2nd Intermediate Casing Shoe	9.625	8.535		9,234'			Brushy Canyon - 5,009'		Stage 3 - 144 bbls, 455 sx of 13.7 ppg 1.78 ft/sk yield Displaced with 172 bbls of system mud, bumped plug @ 740 psi, tool held psi Got 10 bbls, 30 sx to surface after circulating.				
							Bone Spring (Iconard) - 5,904'						
							Bone Spring Lime 1 - 5,926'						
							Bone Spring Sand 1 - 6,859'						
							Bone Spring Lime 2 - 7,138'						
							Bone Spring Sand 2 - 7,350'						
							Bone Spring Lime 3 - 7,886'						
							Bone Spring Sand 3 - 8,520'						
							Wolfcamp - 9,168'						
							12.25 " 2nd Int. Hole T.D. = 9,261'						
							Pennsylvanian - 10,694'						
							Strawn - 10,982'						
							Atoka - 11,453'						
							Morrow - 11,704'						
							Morrow LS - 11,759'						
							Morrow Clastic - 11,955'		96 bbls, 380 sx of 13.2 ppg, 1.42 ft/sk NeoCem Displaced with calculated 348 bbls of 11.6 ppg DBM				
							Mississippian Shale - 12,831'		Got 5 bbls of cement to surface after setting hanger and circulating.				
							Barnett - 12,893'						
							Miss Limestone - 13,101'						
							Woodford - 13,418'						
							8.5 " 3rd Int. Hole T.D. = 13620'						
							Silurian Carbonate - 13,924'						
							Fusselman - 14,116'		Had trouble at T.D. with flows and losses (light window) left a 9.4 ppg mud in the hole before trapping out.				
							Monkton - 14,598'						
							6.5 " Injection Hole T.D. = 14747'						

IPT PERSONNEL: Johnny Musso (Field Ops Manager), Stacy Wimmer (Field Ops Manager), Trevor Smith (Drilling Engineer)

IPT WSS: Bill Moodie, Kevin Silmson, Scott Swanke, Darrin Pitts, Jeff Petty, Jackson Wehr