

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47- 51 - 01593 County Marshall District Franklin
Quad New Martinsville 7.5' Pad Name Goudy Field/Pool Name _____
Farm name PPG Industries, Inc. Well Number 3H
Operator (as registered with the OOG) Gastar Exploration Inc.
Address 229 West Main Street Suite 301 City Clarksburg State WV Zip 26301

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4398548.2 Easting 514671.9
Landing Point of Curve Northing 4398615.4 Easting 514132.0
Bottom Hole Northing 4400031.0 Easting 513219.7

Elevation (ft) 1238' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
Synthetic Oil Base Mud

Date permit issued January 29, 2013 Date drilling commenced 1/27/2013 Date drilling ceased 4/18/2013
Date completion activities began 1/12/2015 Date completion activities ceased 4/11/2015
Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 1155' Open mine(s) (Y/N) depths None
Salt water depth(s) ft 1670' Void(s) encountered (Y/N) depths None
Coal depth(s) ft 999'-1006' & 1221'-1245' Cavern(s) encountered (Y/N) depths None
Is coal being mined in area (Y/N) No

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Reviewed by:

JK

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CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor							
Surface	26"	20"	105'	New	PE / 54.5 #/ft		Yes
Coal	17.5"	13.375"	1296'	New	H-40 / 48 #/ft	83'	Yes
Intermediate 1	12.25"	9.625"	2530'	New	J-55 / 36 #/ft	85'	Yes
Intermediate 2							
Intermediate 3							
Production	8.875"	5.5"	13,138'	New	P-110 / 20 #/ft		Yes
Tubing		2.375"	6662'	New	N80/4.7#		
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	297	15.6	1.19	353	Surface	12
Surface	Type 1	835	15.2	1.26	1052	Surface	8
Coal							8
Intermediate 1	Type 1	845	15	1.29	1090	Surface	8
Intermediate 2							
Intermediate 3							
Production	50:50 Class H / 50:50 Type 1	1315 / 1882	14.5 / 14.5	1.18	3772	Surface	
Tubing							

Drillers TD (ft) 13,178' Loggers TD (ft) N/A
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6038'

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

Surface/Coal Casing - 3 Centralizers at 300' spacing
 Intermediate Casing - 7 Centralizers at 300' Spacing
 Production Casing - 190 Centralizers total - 1 centralizer every joint in the lateral and curve and 1 centralizer every third joint in the vertical section

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED Sodium Salt Tracer

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	See Attached				

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
			See Attached					

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6,413' - 6,389'</u> TVD	<u>7,650' - 12,998'</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1100 psi Bottom Hole 3881 psi DURATION OF TEST 192 hrs

OPEN FLOW Gas 2198 mcfpd Oil 357 bpd NGL _____ bpd Water 376 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	<u>0</u>		<u>0</u>		<u>See Attached</u>

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling
Address 2640 Reach Road City Williamsport State PA Zip 17701

Logging Company Baker Hughes
Address 370 Westec Drive City Mt. Pleasant State PA Zip 15666

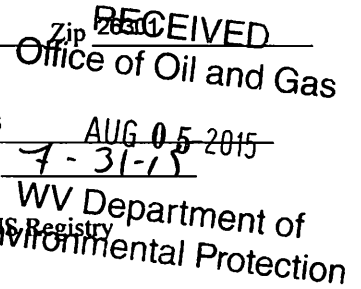
Cementing Company Baker Hughes
Address 837 Philippi Pike City Clarksburg State WV Zip 26301

Stimulating Company Baker Hughes
Address 837 Philippi Pike City Clarksburg State WV Zip 26301

Please insert additional pages as applicable.

Completed by Thomas Rowan Telephone 304-622-4796
Signature [Signature] Title Drilling and Completions Engineer Date 7-31-15

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOURHS Registry



Goudy #3H Perforation Information

<u>Stage</u>	<u>Date</u>	<u>Perforated interval</u>		<u>Number of Perfs</u>	<u>Formation</u>
		<u>From</u> ft	<u>To</u> ft		
1	1/20/2015	12998	12966	24	Marcellus
2	1/21/2015	12926	12744	48	Marcellus
3	1/21/2015	12704	12520	48	Marcellus
4	1/21/2015	12478	12302	48	Marcellus
5	1/21/2015	12256	12005	40	Marcellus
6	1/22/2015	11933	11752	40	Marcellus
7	1/22/2015	11690	11534	36	Marcellus
8	1/22/2015	11227	11431	40	Marcellus
9	1/22/2015	11117	10991	36	Marcellus
10	1/22/2015	10788	10645	40	Marcellus
11	1/23/2015	10585	10430	40	Marcellus
12	1/23/2015	10372	10206	40	Marcellus
13	1/23/2015	10155	9948	41	Marcellus
14	1/23/2015	9890	9682	40	Marcellus
15	1/23/2015	9608	9409	40	Marcellus
16	1/24/2015	9333	9135	40	Marcellus
17	1/24/2015	9309	8876	39	Marcellus
18	1/24/2015	8753	8612	36	Marcellus
19	1/24/2015	8539	8331	40	Marcellus
20	1/24/2015	8204	8067	36	Marcellus
21	1/25/2015	7964	7870	36	Marcellus
22	1/25/2015	7793	7650	40	Marcellus
23	n/a				Marcellus
24	n/a				Marcellus
25	n/a				Marcellus

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Fluid & Sand Volume Summary - Goudy #3H

<u>Stage</u>	<u>Stimulation Date</u>	<u>Avg Pump Rate (BPM)</u>	<u>Avg Pressure (PSI)</u>	<u>Max Break Pres. (PSI)</u>	<u>ISIP (PSI)</u>	<u>Sand Total (lbs)</u>	<u>Total Water (bbls)</u>
1	1/21/2015	57	6742	n/a	3552	55992	3178
2	1/21/2015	60	5770	6950	3696	92906	3863
3	1/21/2015	56	5469	4559	4268	80286	3482
4	1/21/2015	56	5448	4315	3796	82046	3365
5	1/22/2015	57	5784	4560	3706	82691	4127
6	1/22/2015	57	5556	4283	3941	86211	3440
7	1/22/2015	57	6491	5096	3948	56334	3504
8	1/22/2015	56	5614	4257	4108	83986	3347
9	1/22/2015	57	6213	4986	4141	84042	3333
10	1/22/2015	58	6195	5650	4274	90255	3503
11	1/22/2015	58	6380	5950	4078	89117	3409
12	1/23/2015	59	6444	6210	4098	92180	3461
13	1/23/2015	58	6690	5649	3927	89218	3400
14	1/23/2015	59	6269	6078	3707	92191	3373
15	1/23/2015	58	6733	6081	3765	89218	3302
16	1/23/2015	58	6596	6425	3863	95869	3513
17	1/24/2015	58	6462	6500	4157	89950	3563
18	1/24/2015	53	7617	7350	3725	39289	3011
19	1/24/2015	44	8522	5843	4373	3255	2761
20	1/24/2015	58	6621	6536	3404	93690	3322
21	1/24/2015	58	6385	6080	3765	87505	3372
22	1/25/2015	58	5938	5675	3804	85688	3218

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Formations	Top TVD	Base TVD	Top MD	Base MD
SHALE	0	1000	0	1000
SEWICKLEY COAL	1000	1010	1000	1010
SHALE	1010	1220	1010	1220
PITTSBURGE COAL	1220	1230	1220	1230
SHALE AND SANDSTONE	1230	1685	1230	1685
3RD SALT SAND	1685	1740	1865	1740
SHALE	1740	1827	1740	1827
MAXTON	1827	1860	1827	1860
SHALE	1860	1883	1860	1883
BIG LIME	1883	1958	1883	1958
BIG INJUN	1958	2216	1958	2216
WEIR SILTSTONE	2216	2455	2216	2455
BEREA SILTSTONE	2455	2695	2455	2695
SAND AND SHALE	2695	3030	2695	3030
GORDON	3030	3070	3030	3070
SHALE	3070	3520	3070	3520
WARREN SANDSTONE	3520	3550	3520	3550
BRAILLER	3550	5013	3550	5014
JAVA SHALE	5013	5232	5014	5235
PIPE CREEK SHALE	5232	5432	5235	5435
SHALE	5432	5853	5435	5869
RHINESTREET	5853	6147	5869	6188
CASHAQUA	6147	6232	6188	6296
MIDDLESEX	6232	6256	6296	6331
WEST RIVER	6256	6323	6331	6440
GENESEO	6323	6347	6440	6490
TULLY LIMESTONE	6347	6378	6490	6567
HAMILTON	6378	6387	6567	6599
MARCELLUS	6387	na	6599	na
ONONDOGA	na	na	na	na

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REFERENCE WELLPATH IDENTIFICATION

Operator	GASTAR EXPLORATION INC.	Slot	Slot #3H
Area	Marshall County, WV	Well	Goudy 3H
Field	Marshall	Wellbore	Goudy 3H (AWB)
Facility	Goudy	Wellpath	Goudy 3H (AWP) Proj: 13178'
Projection System	NAD83 / UTM ZONE 17 NORTH / METERS	Sidetrack	(none)

WELLPATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
0	0	227.06	0	0	0	0	514671.9	4398548.2	39°44'12.122"N	80°49'43.583"W	0.00	0.00	0.00
13	0	227.06	13	0	0	0	514671.9	4398548.2	39°44'12.122"N	80°49'43.583"W	0.00	0.00	0.00
100	0.67	227.06	100	-0.09	-0.35	-0.37	514671.7	4398548.1	39°44'12.119"N	80°49'43.588"W	0.51	227.06	0.77
200	0.19	247.14	199.99	-0.18	-0.81	-0.95	514671.6	4398548.0	39°44'12.114"N	80°49'43.595"W	1.25	229.67	0.50
300	0.18	266.69	299.99	-0.07	-0.88	-1.26	514671.5	4398548.0	39°44'12.114"N	80°49'43.599"W	1.54	235.05	0.06
400	0.16	251.33	399.99	0.03	-0.94	-1.55	514671.4	4398548.0	39°44'12.113"N	80°49'43.603"W	1.81	238.89	0.05
500	0.18	238.01	499.99	0.07	-1.06	-1.82	514671.3	4398547.9	39°44'12.112"N	80°49'43.606"W	2.11	239.64	0.04
600	0.17	223.76	599.99	0.03	-1.25	-2.05	514671.2	4398547.9	39°44'12.110"N	80°49'43.610"W	2.41	238.57	0.04
700	0.21	212.63	699.99	-0.08	-1.52	-2.25	514671.2	4398547.8	39°44'12.107"N	80°49'43.612"W	2.72	236.08	0.05
800	0.21	198.3	799.99	-0.28	-1.84	-2.41	514671.1	4398547.7	39°44'12.104"N	80°49'43.614"W	3.04	232.58	0.05
900	0.18	166.37	899.99	-0.54	-2.17	-2.43	514671.1	4398547.6	39°44'12.101"N	80°49'43.614"W	3.26	228.24	0.11
1000	0.16	134.37	999.99	-0.83	-2.42	-2.29	514671.2	4398547.5	39°44'12.098"N	80°49'43.613"W	3.34	223.46	0.10
1100	0.21	113.84	1099.99	-1.11	-2.59	-2.03	514671.2	4398547.5	39°44'12.097"N	80°49'43.609"W	3.29	218.02	0.08
1200	0.23	87.61	1199.99	-1.37	-2.66	-1.66	514671.4	4398547.4	39°44'12.096"N	80°49'43.605"W	3.13	211.96	0.10
1300	0.15	68.08	1299.99	-1.49	-2.6	-1.34	514671.5	4398547.5	39°44'12.097"N	80°49'43.600"W	2.93	207.20	0.10
1400	0.46	61.44	1399.99	-1.54	-2.36	-0.86	514671.6	4398547.5	39°44'12.099"N	80°49'43.594"W	2.51	200.08	0.31
1500	0.59	71.45	1499.98	-1.68	-2.01	-0.02	514671.9	4398547.6	39°44'12.102"N	80°49'43.584"W	2.01	180.64	0.16
1600	0.9	86.05	1599.97	-2.18	-1.79	1.25	514672.2	4398547.7	39°44'12.105"N	80°49'43.567"W	2.18	145.05	0.36
1700	0.83	72.12	1699.96	-2.73	-1.51	2.72	514672.7	4398547.8	39°44'12.107"N	80°49'43.548"W	3.11	119.03	0.22
1800	0.8	80.7	1799.95	-3.18	-1.18	4.1	514673.1	4398547.9	39°44'12.111"N	80°49'43.531"W	4.27	106.00	0.13
1900	0.87	88.87	1899.94	-3.84	-1.05	5.55	514673.6	4398547.9	39°44'12.112"N	80°49'43.512"W	5.65	100.70	0.14
2000	1.01	86.93	1999.93	-4.66	-0.99	7.19	514674.1	4398547.9	39°44'12.112"N	80°49'43.491"W	7.25	97.81	0.14
2100	0.86	87.37	2099.92	-5.46	-0.9	8.82	514674.5	4398548.0	39°44'12.113"N	80°49'43.470"W	8.86	95.85	0.15
2200	1.1	71.4	2199.9	-6.06	-0.56	10.48	514675.1	4398548.1	39°44'12.117"N	80°49'43.449"W	10.49	93.08	0.36
2300	0.64	72.54	2299.89	-6.43	-0.09	11.92	514675.5	4398548.2	39°44'12.121"N	80°49'43.431"W	11.92	90.43	0.46

†

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WELL PATH DATA † = interpolated/extrapolated station

MID [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
2400	0.61	96.81	2399.88	-6.9	0.01	12.98	514675.8	4398548.2	39°44'12.122"N	80°49'43.417"W	12.98	89.94	0.26
2500	0.6	87.82	2499.88	-7.5	-0.03	14.03	514676.1	4398548.2	39°44'12.122"N	80°49'43.404"W	14.03	90.12	0.10
2600	0.52	92.21	2599.87	-8.02	-0.03	15.01	514676.4	4398548.2	39°44'12.122"N	80°49'43.391"W	15.01	90.10	0.09
2645	0.57	87.74	2644.87	-8.25	-0.03	15.44	514676.6	4398548.2	39°44'12.122"N	80°49'43.386"W	15.44	90.09	0.15
2686	0.28	79.1	2685.87	-8.39	0	15.74	514676.7	4398548.2	39°44'12.122"N	80°49'43.382"W	15.74	89.99	0.72
2753	2.32	259.35	2752.85	-7.95	-0.22	14.57	514676.3	4398548.2	39°44'12.120"N	80°49'43.397"W	14.57	90.86	3.88
2894	7.05	257.72	2893.34	-3.95	-2.59	3.3	514672.9	4398547.5	39°44'12.097"N	80°49'43.541"W	4.19	128.09	3.36
2939	7.32	256.43	2937.99	-2.09	-3.85	-2.18	514671.2	4398547.1	39°44'12.084"N	80°49'43.611"W	4.42	209.59	0.70
2983	7.18	244.49	2981.64	-0.88	-5.69	-7.39	514669.6	4398546.5	39°44'12.066"N	80°49'43.678"W	9.33	232.42	3.43
3028	7.93	236.89	3026.25	-0.6	-8.6	-12.53	514668.0	4398545.6	39°44'12.038"N	80°49'43.744"W	15.19	235.55	2.77
3073	9.17	231.88	3070.75	-1.02	-12.51	-17.95	514666.4	4398544.4	39°44'11.999"N	80°49'43.813"W	21.88	235.14	3.21
3118	10.87	228.63	3115.06	-2.06	-17.52	-23.96	514664.6	4398542.9	39°44'11.950"N	80°49'43.890"W	29.68	233.82	3.98
3162	12.41	229.28	3158.16	-3.42	-23.35	-30.65	514662.5	4398541.1	39°44'11.892"N	80°49'43.976"W	38.53	232.70	3.51
3207	14.08	234.04	3201.96	-4.5	-29.72	-38.75	514660.1	4398539.2	39°44'11.829"N	80°49'44.080"W	48.83	232.51	4.43
3252	15.63	234.23	3245.45	-5.24	-36.48	-48.1	514657.2	4398537.1	39°44'11.763"N	80°49'44.200"W	60.37	232.82	3.45
3297	16.83	231.9	3288.66	-6.28	-44.04	-58.15	514654.1	4398534.8	39°44'11.688"N	80°49'44.329"W	72.94	232.86	3.03
3341	18.1	228.76	3330.63	-8.01	-52.48	-68.3	514651.1	4398532.3	39°44'11.605"N	80°49'44.459"W	86.13	232.46	3.59
3385	19.19	228.61	3372.32	-10.24	-61.76	-78.86	514647.8	4398529.4	39°44'11.513"N	80°49'44.594"W	100.17	231.93	2.48
3432	20.54	230.57	3416.52	-12.51	-72.11	-91.03	514644.1	4398526.3	39°44'11.411"N	80°49'44.750"W	116.13	231.62	3.20
3476	21.8	232.54	3457.56	-14.23	-81.98	-103.48	514640.3	4398523.3	39°44'11.314"N	80°49'44.910"W	132.02	231.61	3.29
3521	21.55	232.07	3499.37	-15.82	-92.14	-116.63	514636.3	4398520.2	39°44'11.214"N	80°49'45.078"W	148.64	231.69	0.68
3565	21.14	232	3540.36	-17.43	-102	-129.25	514632.5	4398517.2	39°44'11.117"N	80°49'45.240"W	164.65	231.72	0.93
3610	21.77	232.04	3582.24	-19.09	-112.13	-142.23	514628.5	4398514.1	39°44'11.017"N	80°49'45.407"W	181.11	231.75	1.40
3655	21.3	232.45	3624.1	-20.69	-122.24	-155.29	514624.6	4398511.0	39°44'10.917"N	80°49'45.574"W	197.63	231.79	1.10
3699	21.94	233.01	3665	-22.12	-132.06	-168.19	514620.6	4398508.0	39°44'10.820"N	80°49'45.739"W	213.84	231.86	1.53
3744	21.33	232.61	3706.83	-23.56	-142.08	-181.41	514616.6	4398505.0	39°44'10.722"N	80°49'45.909"W	230.43	231.93	1.39
3789	21.95	233.04	3748.66	-25	-152.11	-194.63	514612.6	4398501.9	39°44'10.623"N	80°49'46.078"W	247.02	231.99	1.42
3834	22.61	232.32	3790.45	-26.49	-162.23	-207.91	514608.5	4398498.8	39°44'10.523"N	80°49'46.248"W	263.71	232.04	0.96
3878	22.42	231.58	3831.24	-28.17	-172.4	-220.89	514604.6	4398495.7	39°44'10.423"N	80°49'46.415"W	280.21	232.03	1.95
3923	22.59	230.55	3872.81	-30.19	-183.22	-234.29	514600.5	4398492.4	39°44'10.316"N	80°49'46.587"W	297.43	231.97	0.95
3960	23.45	232.13	3906.86	-31.82	-192.26	-245.59	514597.0	4398489.7	39°44'10.227"N	80°49'46.732"W	311.89	231.95	2.86

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4013	23.12	232.26	3955.55	-33.87	-205.1	-262.14	514592.0	4398485.8	39°44'10.100"N	80°49'46.944"W	332.85	231.96	0.63
4057	22.54	230.87	3996.1	-35.72	-215.71	-275.52	514587.9	4398482.5	39°44'09.996"N	80°49'47.115"W	349.92	231.94	1.80
4102	22.46	231.28	4037.67	-37.73	-226.53	-288.91	514583.8	4398479.2	39°44'09.889"N	80°49'47.287"W	367.13	231.90	0.39
4147	22.61	234.71	4079.24	-39.18	-236.91	-302.68	514579.6	4398476.1	39°44'09.787"N	80°49'47.463"W	384.37	231.95	2.94
4192	23.04	235.36	4120.72	-40.02	-246.91	-316.99	514575.3	4398473.0	39°44'09.688"N	80°49'47.647"W	401.80	232.08	1.11
4236	22.37	235.19	4161.31	-40.76	-256.58	-330.95	514571.0	4398470.1	39°44'09.593"N	80°49'47.826"W	418.76	232.21	1.53
4281	22.68	233.45	4202.87	-41.81	-266.64	-344.95	514566.8	4398467.0	39°44'09.494"N	80°49'48.005"W	435.99	232.30	1.63
4326	23.1	232.89	4244.33	-43.23	-277.13	-358.96	514562.5	4398463.8	39°44'09.390"N	80°49'48.185"W	453.49	232.33	1.05
4371	23.75	232.57	4285.62	-44.81	-287.96	-373.19	514558.2	4398460.5	39°44'09.283"N	80°49'48.367"W	471.38	232.35	1.47
4415	24.54	231.8	4325.77	-46.57	-299	-387.41	514553.8	4398457.1	39°44'09.175"N	80°49'48.550"W	489.37	232.34	1.93
4460	24.26	231.5	4366.75	-48.56	-310.53	-401.99	514549.4	4398453.6	39°44'09.061"N	80°49'48.736"W	507.96	232.31	0.68
4505	23.22	229.78	4407.94	-50.81	-322.02	-416	514545.1	4398450.1	39°44'08.948"N	80°49'48.916"W	526.07	232.26	2.78
4550	23.2	231.6	4449.3	-53.01	-333.25	-429.72	514540.9	4398446.7	39°44'08.837"N	80°49'49.092"W	543.80	232.21	1.59
4594	22.47	230.6	4489.85	-55	-343.97	-443.01	514536.9	4398443.4	39°44'08.731"N	80°49'49.262"W	560.87	232.17	1.88
4639	21.94	227.67	4531.52	-57.56	-355.09	-455.87	514533.0	4398440.1	39°44'08.622"N	80°49'49.427"W	577.85	232.08	2.73
4684	22.29	230.61	4573.21	-60.1	-366.17	-468.68	514529.1	4398436.7	39°44'08.512"N	80°49'49.591"W	594.76	232.00	2.58
4728	22.75	233.87	4613.86	-61.73	-376.48	-482	514525.0	4398433.5	39°44'08.411"N	80°49'49.762"W	611.61	232.01	3.02
4773	23.61	235.5	4655.22	-62.69	-386.72	-496.45	514520.6	4398430.4	39°44'08.310"N	80°49'49.947"W	629.30	232.08	2.38
4818	23.38	235.97	4696.49	-63.33	-396.82	-511.28	514516.1	4398427.3	39°44'08.210"N	80°49'50.137"W	647.20	232.18	0.66
4863	23.03	234.28	4737.85	-64.16	-406.95	-525.83	514511.7	4398424.3	39°44'08.110"N	80°49'50.324"W	664.91	232.26	1.67
4908	23.24	233.73	4779.23	-65.33	-417.34	-540.13	514507.3	4398421.1	39°44'08.008"N	80°49'50.507"W	682.58	232.31	0.67
4953	22.91	232.17	4820.63	-66.82	-427.97	-554.21	514503.0	4398417.9	39°44'07.903"N	80°49'50.688"W	700.22	232.32	1.54
4997	22.8	231.25	4861.18	-68.63	-438.56	-567.62	514498.9	4398414.6	39°44'07.799"N	80°49'50.860"W	717.30	232.31	0.85
5042	23.22	231.87	4902.6	-70.54	-449.49	-581.4	514494.7	4398411.3	39°44'07.691"N	80°49'51.036"W	734.89	232.29	1.08
5087	23.72	234.01	4943.87	-72.06	-460.3	-595.71	514490.4	4398408.0	39°44'07.584"N	80°49'51.220"W	752.83	232.31	2.26
5131	23.73	233.66	4984.14	-73.29	-470.76	-610.02	514486.0	4398404.8	39°44'07.481"N	80°49'51.403"W	770.54	232.34	0.33
5176	23.65	233.96	5025.35	-74.54	-481.43	-624.61	514481.6	4398401.6	39°44'07.376"N	80°49'51.590"W	788.62	232.38	0.32
5221	23.52	232.67	5066.59	-75.95	-492.19	-639.05	514477.2	4398398.3	39°44'07.270"N	80°49'51.775"W	806.62	232.40	1.18
5266	23.31	232.14	5107.89	-77.63	-503.1	-653.22	514472.8	4398395.0	39°44'07.163"N	80°49'51.957"W	824.50	232.40	0.66
5310	23.23	235.02	5148.31	-78.91	-513.42	-667.2	514468.6	4398391.8	39°44'07.061"N	80°49'52.136"W	841.88	232.42	2.59
5356	22.73	234.19	5190.66	-79.91	-523.82	-681.84	514464.1	4398388.6	39°44'06.958"N	80°49'52.324"W	859.82	232.47	1.30

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5400	22.84	234.53	5231.22	-80.93	-533.74	-695.69	514459.9	4398385.6	39°44'06.860"N	80°49'52.501"W	876.85	232.50	0.39
5445	22.49	233.96	5272.75	-82.01	-543.88	-709.76	514455.6	4398382.5	39°44'06.761"N	80°49'52.682"W	894.18	232.54	0.92
5490	21.95	231.99	5314.41	-83.44	-554.12	-723.35	514451.5	4398379.4	39°44'06.660"N	80°49'52.856"W	911.20	232.55	2.04
5534	21.8	232.88	5355.24	-84.97	-564.11	-736.34	514447.5	4398376.4	39°44'06.561"N	80°49'53.022"W	927.59	232.54	0.83
5579	22.04	233.06	5396.99	-86.38	-574.23	-749.76	514443.4	4398373.3	39°44'06.461"N	80°49'53.194"W	944.39	232.55	0.55
5624	21.65	232.05	5438.75	-87.91	-584.41	-763.05	514439.4	4398370.2	39°44'06.361"N	80°49'53.365"W	961.13	232.55	1.20
5669	21.71	231.67	5480.57	-89.63	-594.68	-776.12	514435.4	4398367.1	39°44'06.260"N	80°49'53.532"W	977.76	232.54	0.34
5713	22.2	230.45	5521.38	-91.57	-605.02	-788.92	514431.5	4398363.9	39°44'06.158"N	80°49'53.696"W	994.20	232.52	1.52
5758	22.95	229.06	5562.93	-93.99	-616.18	-802.1	514427.5	4398360.5	39°44'06.048"N	80°49'53.865"W	1011.46	232.47	2.05
5803	22.58	228.84	5604.43	-96.66	-627.61	-815.23	514423.5	4398357.0	39°44'05.935"N	80°49'54.034"W	1028.84	232.41	0.84
5847	23.35	229.35	5644.94	-99.26	-638.85	-828.21	514419.5	4398353.6	39°44'05.824"N	80°49'54.200"W	1045.98	232.36	1.81
5903	24	229.62	5696.23	-102.51	-653.46	-845.3	514414.3	4398349.1	39°44'05.680"N	80°49'54.419"W	1068.43	232.29	1.18
5948	22.94	231.41	5737.5	-104.79	-664.86	-859.13	514410.1	4398345.7	39°44'05.568"N	80°49'54.597"W	1086.35	232.27	2.84
5993	22.92	233.05	5778.95	-106.49	-675.6	-872.99	514405.9	4398342.4	39°44'05.462"N	80°49'54.774"W	1103.88	232.26	1.42
6038	22.58	239.5	5820.45	-106.96	-685.25	-887.44	514401.5	4398339.5	39°44'05.367"N	80°49'54.959"W	1121.21	232.33	5.59
6082	22.92	250.45	5861.05	-104.83	-692.41	-902.8	514396.8	4398337.3	39°44'05.296"N	80°49'55.156"W	1137.75	232.51	9.64
6127	23.78	262.08	5902.38	-99.18	-696.6	-920.05	514391.5	4398336.0	39°44'05.255"N	80°49'55.377"W	1154.01	232.87	10.40
6172	24.76	271.9	5943.42	-90.16	-697.53	-938.46	514385.9	4398335.7	39°44'05.246"N	80°49'55.613"W	1169.30	233.38	9.22
6217	25.99	280.32	5984.1	-78.21	-695.45	-957.59	514380.1	4398336.4	39°44'05.267"N	80°49'55.858"W	1183.48	234.01	8.46
6262	28.15	282.27	6024.16	-64.11	-691.43	-977.66	514374.0	4398337.6	39°44'05.307"N	80°49'56.114"W	1197.46	234.73	5.19
6306	30.86	282.12	6062.45	-48.95	-686.86	-998.84	514367.5	4398339.0	39°44'05.353"N	80°49'56.385"W	1212.21	235.49	6.16
6351	33.95	285.55	6100.45	-31.58	-681.06	-1022.24	514360.4	4398340.7	39°44'05.411"N	80°49'56.685"W	1228.34	236.33	7.99
6396	37.64	292.06	6136.95	-11.11	-672.53	-1047.1	514352.8	4398343.3	39°44'05.495"N	80°49'57.003"W	1244.47	237.29	11.77
6440	41.28	298.74	6170.95	12.48	-660.5	-1072.28	514345.2	4398347.0	39°44'05.615"N	80°49'57.325"W	1259.38	238.37	12.62
6485	45.4	302.72	6203.69	39.97	-644.7	-1098.78	514337.1	4398351.8	39°44'05.771"N	80°49'57.664"W	1273.95	239.60	11.07
6530	49.2	304.07	6234.2	70.09	-626.49	-1126.38	514328.7	4398357.4	39°44'05.952"N	80°49'58.016"W	1288.88	240.92	8.73
6574	52.51	304.71	6261.97	101.4	-607.22	-1154.53	514320.1	4398363.2	39°44'06.143"N	80°49'58.376"W	1304.47	242.26	7.61
6619	56.41	305.71	6288.12	135.2	-586.1	-1184.44	514311.0	4398369.7	39°44'06.352"N	80°49'58.759"W	1321.52	243.67	8.85
6664	59.92	308.82	6311.86	171	-562.94	-1214.84	514301.7	4398376.7	39°44'06.581"N	80°49'59.147"W	1338.93	245.14	9.76
6709	63.24	312.16	6333.28	208.78	-537.24	-1244.92	514292.6	4398384.6	39°44'06.836"N	80°49'59.532"W	1355.89	246.66	9.85
6753	66.12	314.75	6352.08	247.31	-509.88	-1273.78	514283.8	4398392.9	39°44'07.107"N	80°49'59.900"W	1372.04	248.18	8.52

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6798	70.08	316.63	6368.84	288.13	-480	-1302.94	514274.9	4398402.0	39°44'07.403"N	80°50'00.273"W	1388.54	249.78	9.51
6843	72.78	318.63	6383.18	330.12	-448.48	-1331.68	514266.1	4398411.6	39°44'07.715"N	80°50'00.640"W	1405.17	251.39	7.33
6888	76.64	321.46	6395.04	373.11	-415.21	-1359.54	514257.6	4398421.7	39°44'08.044"N	80°50'00.996"W	1421.53	253.02	10.51
6932	78.19	323.29	6404.63	415.86	-381.2	-1385.75	514249.7	4398432.1	39°44'08.381"N	80°50'01.331"W	1437.23	254.62	5.37
6977	81.69	324.89	6412.49	460.07	-345.32	-1411.73	514241.7	4398443.0	39°44'08.736"N	80°50'01.662"W	1453.35	256.26	8.53
7022	86.83	326.26	6416.99	504.79	-308.4	-1437.03	514234.0	4398454.3	39°44'09.101"N	80°50'01.985"W	1469.75	257.89	11.82
7067	90.89	327.29	6417.88	549.77	-270.77	-1461.68	514226.5	4398465.7	39°44'09.473"N	80°50'02.300"W	1486.54	259.51	9.31
7111	90.74	327.51	6417.26	593.76	-233.71	-1485.38	514219.3	4398477.0	39°44'09.840"N	80°50'02.602"W	1503.65	261.06	0.61
7156	90.74	327.29	6416.68	638.76	-195.8	-1509.62	514211.9	4398488.6	39°44'10.215"N	80°50'02.912"W	1522.27	262.61	0.49
7201	90.4	326.53	6416.23	683.75	-158.1	-1534.19	514204.4	4398500.1	39°44'10.588"N	80°50'03.225"W	1542.31	264.12	1.85
7246	90.43	326.24	6415.9	728.73	-120.63	-1559.1	514196.8	4398511.5	39°44'10.959"N	80°50'03.543"W	1563.76	265.58	0.65
7290	90.43	327.21	6415.57	772.72	-83.84	-1583.24	514189.5	4398522.7	39°44'11.323"N	80°50'03.852"W	1585.46	266.97	2.20
7335	90.52	327.57	6415.2	817.72	-45.94	-1607.49	514182.1	4398534.2	39°44'11.698"N	80°50'04.161"W	1608.15	268.36	0.82
7380	90.46	328.81	6414.82	862.72	-7.7	-1631.21	514174.9	4398545.9	39°44'12.076"N	80°50'04.464"W	1631.23	269.73	2.76
7425	90.46	329.51	6414.45	907.7	30.94	-1654.28	514167.8	4398557.7	39°44'12.459"N	80°50'04.758"W	1654.57	271.07	1.56
7470	90.43	328.87	6414.1	952.69	69.58	-1677.33	514160.8	4398569.4	39°44'12.841"N	80°50'05.052"W	1678.77	272.38	1.42
7514	90.52	328.12	6413.74	996.68	107.1	-1700.32	514153.8	4398580.9	39°44'13.212"N	80°50'05.346"W	1703.69	273.60	1.72
7559	90.4	327.66	6413.38	1041.68	145.21	-1724.24	514146.5	4398592.5	39°44'13.589"N	80°50'05.651"W	1730.34	274.81	1.06
7604	90.09	327.94	6413.19	1086.68	183.29	-1748.22	514139.2	4398604.1	39°44'13.966"N	80°50'05.957"W	1757.80	275.99	0.93
7648	90.18	327.18	6413.08	1130.68	220.42	-1771.82	514132.0	4398615.4	39°44'14.334"N	80°50'06.258"W	1785.48	277.09	1.74
7693	90.25	326.27	6412.91	1175.67	258.04	-1796.51	514124.5	4398626.9	39°44'14.706"N	80°50'06.573"W	1814.94	278.17	2.03
7738	90	324.77	6412.82	1220.63	295.14	-1821.98	514116.7	4398638.2	39°44'15.073"N	80°50'06.899"W	1845.73	279.20	3.38
7783	89.6	324.72	6412.97	1265.57	331.88	-1847.96	514108.8	4398649.4	39°44'15.436"N	80°50'07.230"W	1877.52	280.18	0.90
7827	89.57	324.47	6413.29	1309.5	367.75	-1873.45	514101.1	4398660.3	39°44'15.791"N	80°50'07.556"W	1909.20	281.11	0.57
7872	89.51	324.35	6413.65	1354.42	404.34	-1899.64	514093.1	4398671.4	39°44'16.153"N	80°50'07.890"W	1942.19	282.02	0.30
7917	89.6	325.21	6414	1399.36	441.1	-1925.59	514085.2	4398682.6	39°44'16.517"N	80°50'08.221"W	1975.46	282.90	1.92
7962	89.63	326.6	6414.3	1444.33	478.36	-1950.81	514077.5	4398694.0	39°44'16.886"N	80°50'08.544"W	2008.61	283.78	3.09
8006	89.35	327.3	6414.7	1488.32	515.24	-1974.81	514070.2	4398705.2	39°44'17.251"N	80°50'08.850"W	2040.91	284.62	1.71
8051	89.82	327.64	6415.02	1533.32	553.18	-1999	514062.8	4398716.8	39°44'17.626"N	80°50'09.159"W	2074.13	285.47	1.29
8096	90.03	328.09	6415.08	1578.32	591.29	-2022.94	514055.5	4398728.4	39°44'18.003"N	80°50'09.464"W	2107.58	286.29	1.10
8140	90.09	328.17	6415.03	1623.32	629.5	-2046.7	514048.3	4398740.0	39°44'18.381"N	80°50'09.767"W	2141.32	287.10	0.22

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8185	90	328.16	6415	1667.32	666.88	-2069.91	514041.2	4398751.4	39°44'18.751"N	80°50'10.064"W	2174.69	287.86	0.21
8230	90.58	328.08	6414.77	1712.32	705.1	-2093.67	514034.0	4398763.1	39°44'19.129"N	80°50'10.367"W	2209.22	288.61	1.30
8275	90.52	327.98	6414.34	1757.31	743.27	-2117.5	514026.7	4398774.7	39°44'19.507"N	80°50'10.671"W	2244.16	289.34	0.26
8319	90.58	328.24	6413.92	1801.31	780.63	-2140.74	514019.6	4398786.1	39°44'19.877"N	80°50'10.968"W	2278.63	290.03	0.61
8364	90.55	328.27	6413.47	1846.31	818.89	-2164.42	514012.4	4398797.7	39°44'20.255"N	80°50'11.270"W	2314.15	290.72	0.09
8409	90.55	328.32	6413.04	1891.3	857.17	-2188.07	514005.2	4398809.4	39°44'20.634"N	80°50'11.572"W	2349.98	291.39	0.11
8454	90.58	328.14	6412.6	1936.3	895.43	-2211.76	513998.0	4398821.1	39°44'21.012"N	80°50'11.874"W	2386.14	292.04	0.41
8499	90.62	327.9	6412.13	1981.3	933.6	-2235.59	513990.7	4398832.7	39°44'21.390"N	80°50'12.178"W	2422.70	292.67	0.54
8543	90.55	327.62	6411.68	2025.3	970.81	-2259.06	513983.6	4398844.0	39°44'21.758"N	80°50'12.478"W	2458.83	293.26	0.66
8588	90.43	326.71	6411.29	2070.29	1008.62	-2283.46	513976.1	4398855.6	39°44'22.132"N	80°50'12.789"W	2496.30	293.83	2.04
8633	90.58	326.16	6410.9	2115.28	1046.12	-2308.34	513968.6	4398867.0	39°44'22.503"N	80°50'13.107"W	2534.32	294.38	1.27
8678	90.52	325.83	6410.46	2160.25	1083.42	-2333.5	513960.9	4398878.3	39°44'22.872"N	80°50'13.428"W	2572.75	294.91	0.75
8723	90.58	326.01	6410.03	2205.23	1120.69	-2358.72	513953.2	4398889.7	39°44'23.241"N	80°50'13.750"W	2611.42	295.41	0.42
8767	90.58	325.94	6409.59	2249.2	1157.15	-2383.34	513945.7	4398900.8	39°44'23.602"N	80°50'14.064"W	2649.40	295.90	0.16
8812	90.58	326.36	6409.13	2294.18	1194.52	-2408.4	513938.1	4398912.2	39°44'23.972"N	80°50'14.384"W	2688.36	296.38	0.93
8857	90.55	326.79	6408.69	2339.17	1232.08	-2433.19	513930.5	4398923.6	39°44'24.343"N	80°50'14.701"W	2727.35	296.86	0.96
8902	90.59	327.24	6408.24	2384.16	1269.82	-2457.69	513923.1	4398935.1	39°44'24.717"N	80°50'15.014"W	2766.35	297.32	1.00
8946	90.55	327.04	6407.8	2428.16	1306.78	-2481.56	513915.8	4398946.4	39°44'25.083"N	80°50'15.318"W	2804.61	297.77	0.46
8991	90.52	326.79	6407.38	2473.15	1344.49	-2506.12	513908.3	4398957.9	39°44'25.456"N	80°50'15.632"W	2843.99	298.21	0.56
9036	90.55	327.64	6406.96	2518.14	1382.32	-2530.49	513900.9	4398969.4	39°44'25.830"N	80°50'15.943"W	2883.43	298.65	1.89
9081	90.62	327.88	6406.5	2563.14	1420.37	-2554.49	513893.6	4398981.0	39°44'26.206"N	80°50'16.249"W	2922.82	299.08	0.56
9125	90.52	328.04	6406.06	2607.14	1457.67	-2577.84	513886.4	4398992.4	39°44'26.575"N	80°50'16.547"W	2961.43	299.49	0.43
9170	90.62	328.26	6405.62	2652.14	1495.89	-2601.58	513879.2	4399004.0	39°44'26.954"N	80°50'16.850"W	3000.99	299.90	0.54
9215	90.55	328.74	6405.16	2697.13	1534.26	-2625.09	513872.1	4399015.7	39°44'27.333"N	80°50'17.150"W	3040.57	300.31	1.08
9259	90.52	328.54	6404.75	2741.12	1571.83	-2647.99	513865.1	4399027.1	39°44'27.705"N	80°50'17.443"W	3079.37	300.69	0.46
9304	90.52	328.17	6404.34	2786.12	1610.14	-2671.6	513857.9	4399038.8	39°44'28.084"N	80°50'17.744"W	3119.29	301.08	0.82
9349	90.55	328.35	6403.92	2831.12	1648.41	-2695.27	513850.7	4399050.5	39°44'28.463"N	80°50'18.046"W	3159.39	301.45	0.41
9394	90.4	328.62	6403.54	2876.11	1686.77	-2718.79	513843.5	4399062.2	39°44'28.842"N	80°50'18.346"W	3199.53	301.82	0.69
9439	90.58	328.32	6403.16	2921.11	1725.12	-2742.32	513836.3	4399073.9	39°44'29.222"N	80°50'18.647"W	3239.81	302.17	0.78
9483	90.65	328.24	6402.69	2965.1	1762.55	-2765.46	513829.3	4399085.3	39°44'29.592"N	80°50'18.942"W	3279.38	302.51	0.24
9528	90.55	328.36	6402.22	3010.1	1800.83	-2789.1	513822.1	4399096.9	39°44'29.971"N	80°50'19.244"W	3319.95	302.85	0.35

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MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
9573	90.43	329.34	6401.83	3055.09	1839.34	-2812.38	513815.0	4399108.7	39°44'30.352"N	80°50'19.541"W	3360.45	303.19	2.19
9618	90.12	329.82	6401.62	3100.07	1878.15	-2835.16	513808.0	4399120.5	39°44'30.736"N	80°50'19.832"W	3400.82	303.52	1.27
9662	90.12	330.21	6401.52	3144.03	1916.26	-2857.15	513801.3	4399132.1	39°44'31.113"N	80°50'20.112"W	3440.26	303.85	0.89
9707	90.34	330.3	6401.34	3188.99	1955.33	-2879.48	513794.5	4399144.0	39°44'31.499"N	80°50'20.397"W	3480.62	304.18	0.53
9752	89.94	330.14	6401.23	3233.95	1994.39	-2901.83	513787.7	4399155.9	39°44'31.885"N	80°50'20.682"W	3521.10	304.50	0.96
9797	89.85	330.58	6401.32	3278.91	2033.5	-2924.08	513781.0	4399167.8	39°44'32.272"N	80°50'20.966"W	3561.65	304.82	1.00
9841	89.78	328.69	6401.46	3322.88	2071.46	-2946.32	513774.2	4399179.4	39°44'32.648"N	80°50'21.250"W	3601.63	305.11	4.30
9886	90.18	325.75	6401.47	3367.87	2109.29	-2970.68	513766.8	4399190.9	39°44'33.022"N	80°50'21.561"W	3643.36	305.38	6.59
9931	90.18	324.54	6401.33	3412.82	2146.22	-2996.4	513758.9	4399202.2	39°44'33.388"N	80°50'21.890"W	3685.74	305.61	2.69
9975	90.09	324.53	6401.23	3456.75	2182.05	-3021.93	513751.1	4399213.1	39°44'33.742"N	80°50'22.216"W	3727.39	305.83	0.21
10020	90.15	324.01	6401.13	3501.67	2218.58	-3048.21	513743.1	4399224.2	39°44'34.104"N	80°50'22.551"W	3770.10	306.05	1.16
10065	90.18	323.82	6401	3546.56	2254.95	-3074.71	513735.1	4399235.3	39°44'34.464"N	80°50'22.890"W	3812.96	306.26	0.43
10110	90.28	323.31	6400.82	3591.44	2291.15	-3101.44	513726.9	4399246.3	39°44'34.822"N	80°50'23.231"W	3855.94	306.46	1.15
10155	90.22	323.14	6400.63	3636.3	2327.2	-3128.38	513718.7	4399257.3	39°44'35.179"N	80°50'23.575"W	3899.05	306.65	0.40
10199	90.12	323.2	6400.5	3680.15	2362.41	-3154.75	513710.7	4399268.0	39°44'35.527"N	80°50'23.912"W	3941.25	306.83	0.27
10244	90.28	324.21	6400.34	3725.04	2398.68	-3181.39	513702.6	4399279.1	39°44'35.886"N	80°50'24.252"W	3984.33	307.02	2.27
10289	90.12	325.85	6400.18	3769.98	2435.56	-3207.18	513694.7	4399290.3	39°44'36.251"N	80°50'24.581"W	4027.15	307.21	3.66
10334	90.25	326.77	6400.04	3814.97	2473	-3232.14	513687.1	4399301.7	39°44'36.621"N	80°50'24.900"W	4069.70	307.42	2.06
10378	90.15	327.48	6399.88	3858.96	2509.95	-3256.03	513679.8	4399313.0	39°44'36.987"N	80°50'25.205"W	4111.15	307.63	1.63
10423	90.15	328.42	6399.77	3903.96	2548.09	-3279.9	513672.5	4399324.6	39°44'37.364"N	80°50'25.510"W	4153.38	307.84	2.09
10468	90.52	329.47	6399.5	3948.95	2586.64	-3303.12	513665.5	4399336.3	39°44'37.746"N	80°50'25.806"W	4195.39	308.06	2.47
10513	90.52	329.77	6399.09	3993.93	2625.46	-3325.87	513658.5	4399348.2	39°44'38.130"N	80°50'26.097"W	4237.27	308.29	0.67
10557	90.62	330.44	6398.66	4037.89	2663.6	-3347.8	513651.9	4399359.8	39°44'38.507"N	80°50'26.376"W	4278.15	308.51	1.54
10602	90.62	329.41	6398.17	4082.85	2702.54	-3370.35	513645.0	4399371.7	39°44'38.892"N	80°50'26.664"W	4320.07	308.73	2.29
10647	90.65	327.98	6397.67	4127.84	2740.99	-3393.73	513637.9	4399383.4	39°44'39.273"N	80°50'26.963"W	4362.39	308.93	3.18
10692	90.86	326.88	6397.08	4172.84	2778.91	-3417.96	513630.5	4399394.9	39°44'39.648"N	80°50'27.272"W	4405.08	309.11	2.49
10733	91.02	326.54	6396.41	4213.83	2813.17	-3440.46	513623.6	4399405.4	39°44'39.987"N	80°50'27.559"W	4444.17	309.27	0.92
10781	90.71	327.03	6395.68	4261.81	2853.33	-3466.75	513615.6	4399417.6	39°44'40.384"N	80°50'27.895"W	4489.97	309.46	1.21
10826	90.52	327.45	6395.2	4306.81	2891.17	-3491.1	513608.2	4399429.1	39°44'40.759"N	80°50'28.206"W	4532.84	309.63	1.02
10871	90.46	327.21	6394.81	4351.8	2929.05	-3515.39	513600.8	4399440.7	39°44'41.133"N	80°50'28.516"W	4575.72	309.80	0.55
10915	90.06	327.69	6394.61	4395.8	2966.13	-3539.06	513593.6	4399452.0	39°44'41.500"N	80°50'28.818"W	4617.67	309.97	1.42

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WELL PATH DATA † = interpolated/extrapolated station

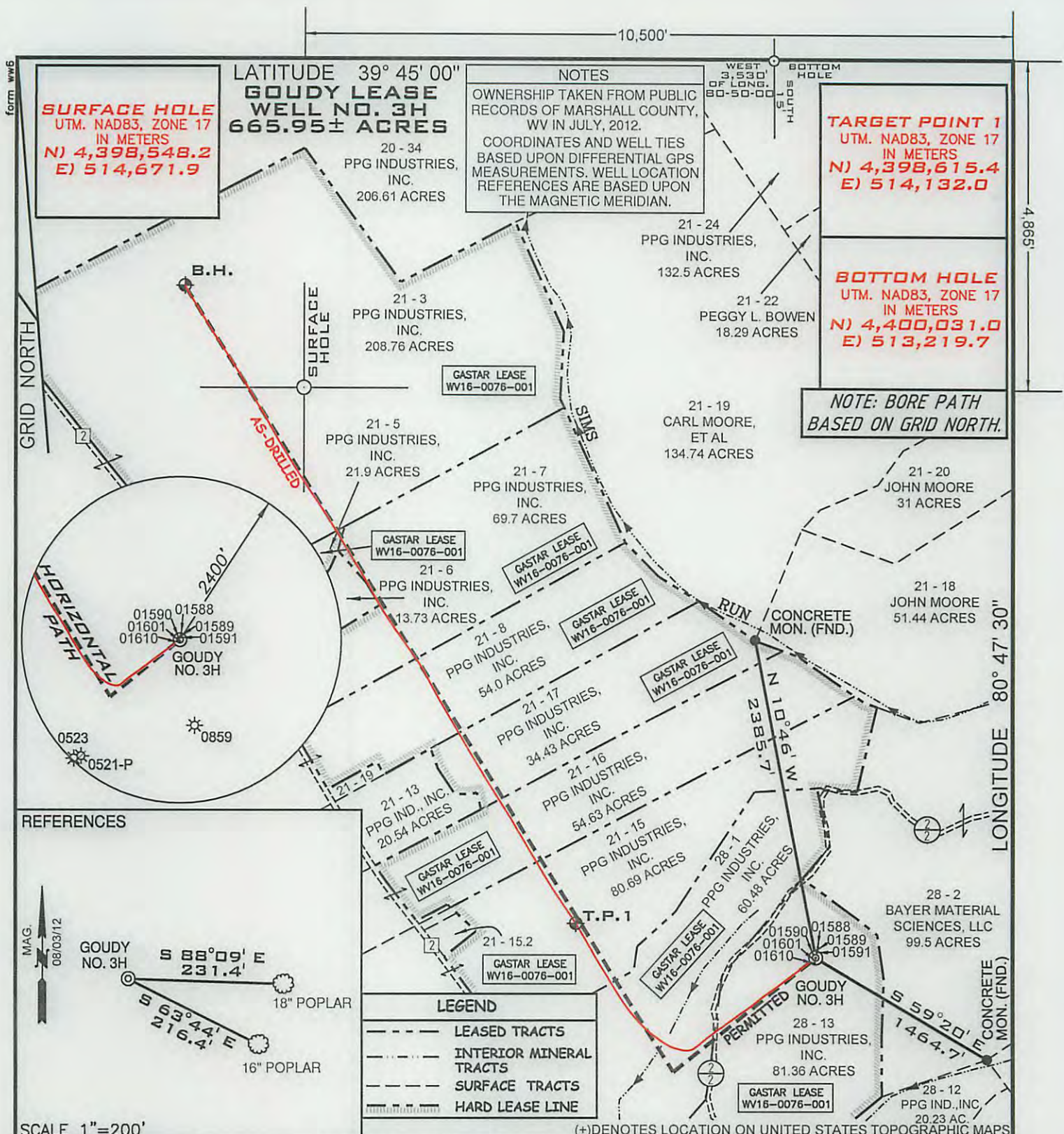
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
10960	90.12	328.29	6394.54	4440.8	3004.29	-3562.91	513586.3	4399463.6	39°44'41.878"N	80°50'29.123"W	4660.48	310.14	1.34
11005	90.09	328.22	6394.46	4485.8	3042.56	-3586.59	513579.1	4399475.3	39°44'42.256"N	80°50'29.425"W	4703.27	310.31	0.17
11050	90.03	327.89	6394.41	4530.8	3080.75	-3610.4	513571.8	4399486.9	39°44'42.634"N	80°50'29.729"W	4746.15	310.47	0.75
11095	90.12	327.24	6394.35	4575.8	3118.73	-3634.53	513564.5	4399498.5	39°44'43.010"N	80°50'30.037"W	4789.18	310.63	1.46
11139	89.54	326.66	6394.48	4619.79	3155.61	-3658.53	513557.2	4399509.7	39°44'43.375"N	80°50'30.343"W	4831.43	310.78	1.86
11184	89.54	327.06	6394.85	4664.79	3193.28	-3683.13	513549.7	4399521.2	39°44'43.748"N	80°50'30.657"W	4874.68	310.93	0.89
11229	89.32	326.24	6395.29	4709.78	3230.87	-3707.87	513542.2	4399532.6	39°44'44.120"N	80°50'30.973"W	4918.01	311.07	1.89
11273	89.42	325.15	6395.78	4753.74	3267.22	-3732.66	513534.6	4399543.7	39°44'44.479"N	80°50'31.290"W	4960.59	311.20	2.49
11318	89.51	324.29	6396.2	4798.68	3303.95	-3758.65	513526.7	4399554.9	39°44'44.843"N	80°50'31.622"W	5004.35	311.32	1.92
11363	89.54	324.72	6396.57	4843.6	3340.58	-3784.78	513518.7	4399566.1	39°44'45.205"N	80°50'31.955"W	5048.17	311.43	0.96
11408	89.6	325.96	6396.91	4888.56	3377.6	-3810.37	513510.9	4399577.3	39°44'45.571"N	80°50'32.282"W	5091.86	311.55	2.76
11452	89.69	326.73	6397.18	4932.54	3414.22	-3834.75	513503.5	4399588.5	39°44'45.934"N	80°50'32.593"W	5134.42	311.68	1.76
11497	89.51	326.28	6397.49	4977.53	3451.75	-3859.59	513495.9	4399599.9	39°44'46.305"N	80°50'32.911"W	5177.93	311.81	1.08
11542	90.28	326.21	6397.58	5022.51	3489.16	-3884.59	513488.3	4399611.3	39°44'46.675"N	80°50'33.230"W	5221.52	311.93	1.72
11587	90.18	326.86	6397.4	5067.5	3526.7	-3909.4	513480.8	4399622.8	39°44'47.047"N	80°50'33.547"W	5265.08	312.05	1.46
11631	90.15	327.04	6397.27	5111.49	3563.58	-3933.4	513473.4	4399634.0	39°44'47.412"N	80°50'33.853"W	5307.61	312.18	0.41
11676	90.22	327.22	6397.12	5156.49	3601.38	-3957.82	513466.0	4399645.5	39°44'47.785"N	80°50'34.165"W	5351.10	312.30	0.43
11721	90.18	327.35	6396.97	5201.49	3639.24	-3982.14	513458.6	4399657.0	39°44'48.160"N	80°50'34.475"W	5394.58	312.42	0.30
11766	90.15	327.11	6396.84	5246.49	3677.08	-4006.5	513451.2	4399668.6	39°44'48.534"N	80°50'34.786"W	5438.10	312.55	0.54
11810	90.15	327.97	6396.72	5290.48	3714.2	-4030.12	513444.0	4399679.9	39°44'48.902"N	80°50'35.088"W	5480.61	312.66	1.95
11855	90.22	328.78	6396.58	5335.48	3752.52	-4053.71	513436.8	4399691.6	39°44'49.281"N	80°50'35.389"W	5523.95	312.79	1.81
11900	90.15	329.13	6396.43	5380.47	3791.07	-4076.92	513429.7	4399703.3	39°44'49.662"N	80°50'35.685"W	5567.18	312.92	0.79
11945	90.15	330.04	6396.31	5425.45	3829.88	-4099.7	513422.8	4399715.1	39°44'50.046"N	80°50'35.976"W	5610.30	313.05	2.02
11989	90.18	329.56	6396.19	5469.42	3867.91	-4121.83	513416.0	4399726.7	39°44'50.422"N	80°50'36.259"W	5652.45	313.18	1.09
12034	90.15	328.7	6396.06	5514.41	3906.53	-4144.92	513409.0	4399738.5	39°44'50.804"N	80°50'36.553"W	5695.73	313.30	1.91
12079	90.22	327.93	6395.91	5559.41	3944.82	-4168.56	513401.8	4399750.2	39°44'51.183"N	80°50'36.855"W	5739.21	313.42	1.72
12123	90.22	327.15	6395.74	5603.41	3981.95	-4192.17	513394.6	4399761.5	39°44'51.551"N	80°50'37.157"W	5781.89	313.53	1.77
12168	90.25	327.75	6395.56	5648.41	4019.88	-4216.38	513387.2	4399773.0	39°44'51.926"N	80°50'37.466"W	5825.57	313.63	1.33
12213	90.22	327.88	6395.37	5693.4	4057.96	-4240.35	513379.9	4399784.6	39°44'52.303"N	80°50'37.772"W	5869.21	313.74	0.30
12257	90.18	327.95	6395.22	5737.4	4095.24	-4263.72	513372.8	4399796.0	39°44'52.671"N	80°50'38.070"W	5911.88	313.85	0.18
12302	90.25	327.64	6395.05	5782.4	4133.32	-4287.71	513365.5	4399807.6	39°44'53.048"N	80°50'38.376"W	5955.57	313.95	0.71

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MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
12347	90.22	326.89	6394.87	5827.4	4171.17	-4312.04	513358.1	4399819.1	39°44'53.423"N	80°50'38.687"W	5999.36	314.05	1.67
12392	90.28	327.2	6394.67	5872.4	4208.93	-4336.52	513350.6	4399830.6	39°44'53.796"N	80°50'39.000"W	6043.22	314.15	0.70
12436	90.25	327.39	6394.47	5916.39	4245.95	-4360.29	513343.4	4399841.9	39°44'54.163"N	80°50'39.303"W	6086.07	314.24	0.44
12481	90.31	326.98	6394.25	5961.39	4283.77	-4384.68	513335.9	4399853.4	39°44'54.537"N	80°50'39.614"W	6129.94	314.33	0.92
12526	90.37	325.73	6393.98	6006.38	4321.23	-4409.61	513328.3	4399864.8	39°44'54.907"N	80°50'39.933"W	6173.96	314.42	2.78
12570	90.71	325.09	6393.57	6050.34	4357.45	-4434.59	513320.7	4399875.9	39°44'55.266"N	80°50'40.252"W	6217.15	314.50	1.65
12615	90.74	325.3	6393	6095.28	4394.4	-4460.27	513312.9	4399887.1	39°44'55.631"N	80°50'40.580"W	6261.37	314.57	0.47
12660	90.8	325.89	6392.39	6140.25	4431.53	-4485.7	513305.2	4399898.4	39°44'55.999"N	80°50'40.904"W	6305.54	314.65	1.32
12704	90.8	325.78	6391.78	6184.22	4467.93	-4510.4	513297.6	4399909.5	39°44'56.359"N	80°50'41.220"W	6348.71	314.73	0.25
12749	90.52	325.29	6391.26	6229.18	4505.03	-4535.87	513289.9	4399920.8	39°44'56.726"N	80°50'41.545"W	6392.91	314.81	1.25
12794	90.49	326.19	6390.86	6274.15	4542.22	-4561.2	513282.2	4399932.2	39°44'57.094"N	80°50'41.869"W	6437.10	314.88	2.00
12839	90.37	327.69	6390.52	6319.14	4579.93	-4585.75	513274.7	4399943.7	39°44'57.467"N	80°50'42.182"W	6481.11	314.96	3.34
12883	90.52	328.06	6390.18	6363.14	4617.19	-4609.14	513267.6	4399955.0	39°44'57.836"N	80°50'42.481"W	6524.01	315.05	0.91
12928	90.62	327.43	6389.74	6408.14	4655.25	-4633.16	513260.2	4399966.6	39°44'58.212"N	80°50'42.787"W	6567.91	315.14	1.42
12973	90.77	326.71	6389.19	6453.13	4693.01	-4657.62	513252.8	4399978.1	39°44'58.586"N	80°50'43.100"W	6611.94	315.22	1.63
13018	90.83	326.36	6388.56	6498.11	4730.55	-4682.43	513245.2	4399989.5	39°44'58.957"N	80°50'43.417"W	6656.07	315.29	0.79
13062	90.89	326.04	6387.9	6542.09	4767.11	-4706.9	513237.8	4400000.7	39°44'59.319"N	80°50'43.729"W	6699.27	315.36	0.74
13107	91.6	327.93	6386.92	6587.07	4804.83	-4731.42	513230.3	4400012.2	39°44'59.692"N	80°50'44.042"W	6743.34	315.44	4.49
13152	91.63	332	6385.65	6632.01	4843.76	-4753.93	513223.4	4400024.0	39°45'00.077"N	80°50'44.329"W	6786.89	315.54	9.04
13178	91.63	332	6384.91	6657.93	4866.71	-4766.13	513219.73	4400031.03	39°45'00.304"N	80°50'44.485"W	6811.82	315.60	0.00

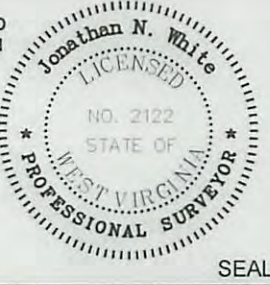
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Office of Oil and Gas
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FILE NUMBER W0120315 (WB1-55)
 DRAWING NUMBER GOUDY_WP_3H-WR35
 SCALE 1" = 1000'
 MINIMUM DEGREE OF ACCURACY 1/200
 PROVEN SOURCE OF ELEVATION SUBMETER MAPPING
GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

P.S. 2122
 Jonathan N. White
 Office of Oil and Gas
 AUG 05 2015
 WV Department of Environmental Protection



WVDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304



DATE: JULY 15, 2015

OPERATORS WELL NO. GOUDY NO. 3H AS-DRILLED
 API WELL NO. 47-051-01593
 STATE COUNTY PERMIT

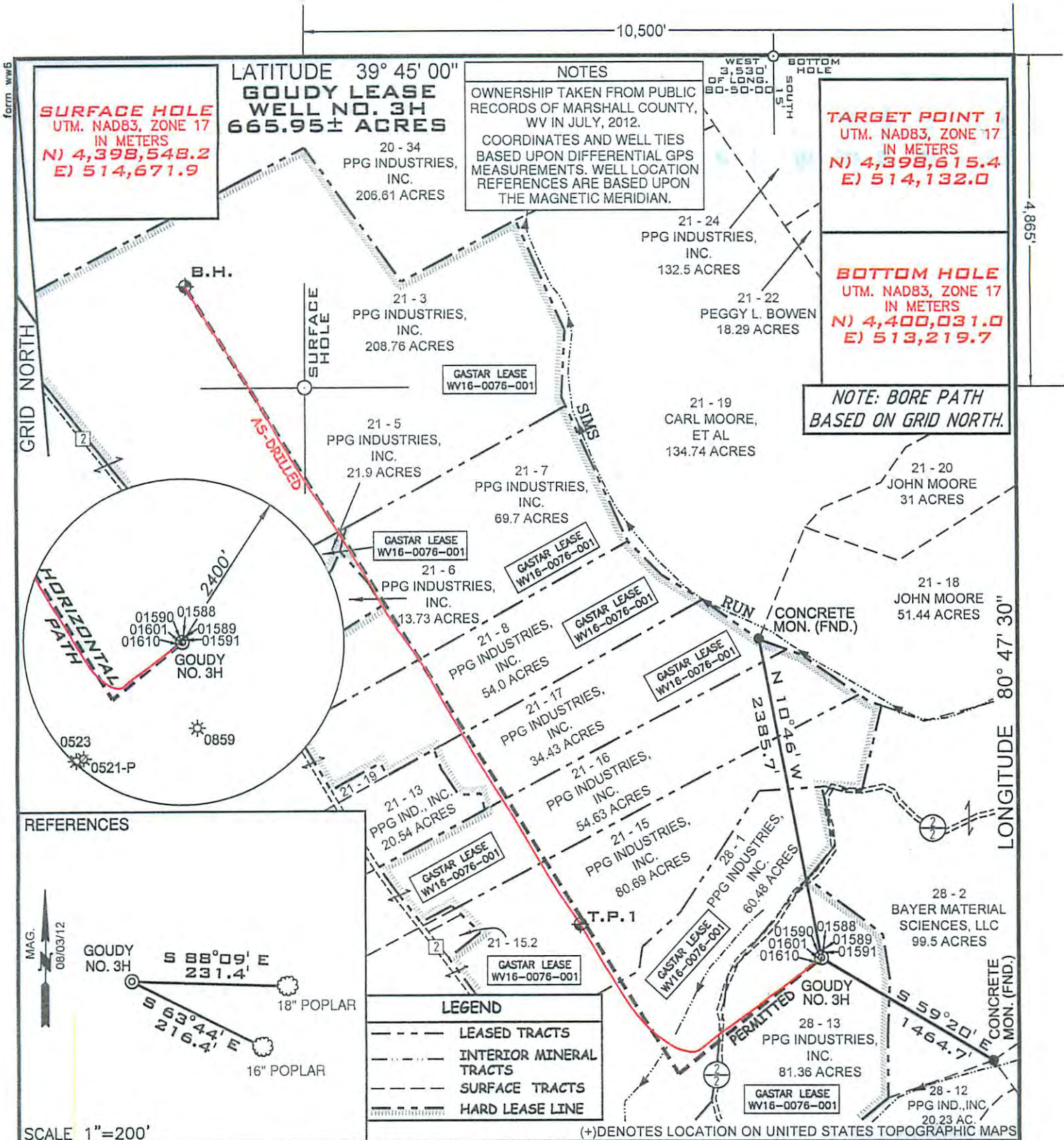
LOCATION ELEVATION 1238' WATERSHED _____ TRIBUTARY OF THE OHIO RIVER
 DISTRICT FRANKLIN COUNTY MARSHALL
 QUADRANGLE NEW MARTINSVILLE 7.5' LEASE NUMBER WV16-0076-001

SURFACE OWNER PPG INDUSTRIES, INC. ACREAGE 81.36
 OIL & GAS ROYALTY OWNER PPG INDUSTRIES, INC. LEASE ACREAGE 665.95

PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___
 PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) _____
 PLUG & ABANDON ___ CLEAN OUT & REPLUG ___

TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD 6,413' TMD 13,177'

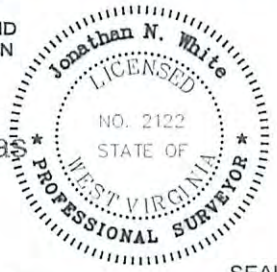
WELL OPERATOR GASTAR EXPLORATION INC. DESIGNATED AGENT MICHAEL McCOWN
 ADDRESS 229 W MAIN STREET, SUITE 301 ADDRESS 229 W MAIN STREET, SUITE 301
CLARKSBURG WV, 26301 CLARKSBURG WV, 26301



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WVDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304



WV Department of Environmental Protection
 DATE: JULY 15, 2015
 OPERATORS WELL NO. GOUDY NO. 3H AS-DRILLED

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
 (IF "GAS") PRODUCTION STORAGE DEEP SHALLOW

LOCATION ELEVATION 1238' WATERSHED TRIBUTARY OF THE OHIO RIVER
 DISTRICT FRANKLIN COUNTY MARSHALL
 QUADRANGLE NEW MARTINSVILLE 7.5' LEASE NUMBER WV16-0076-001

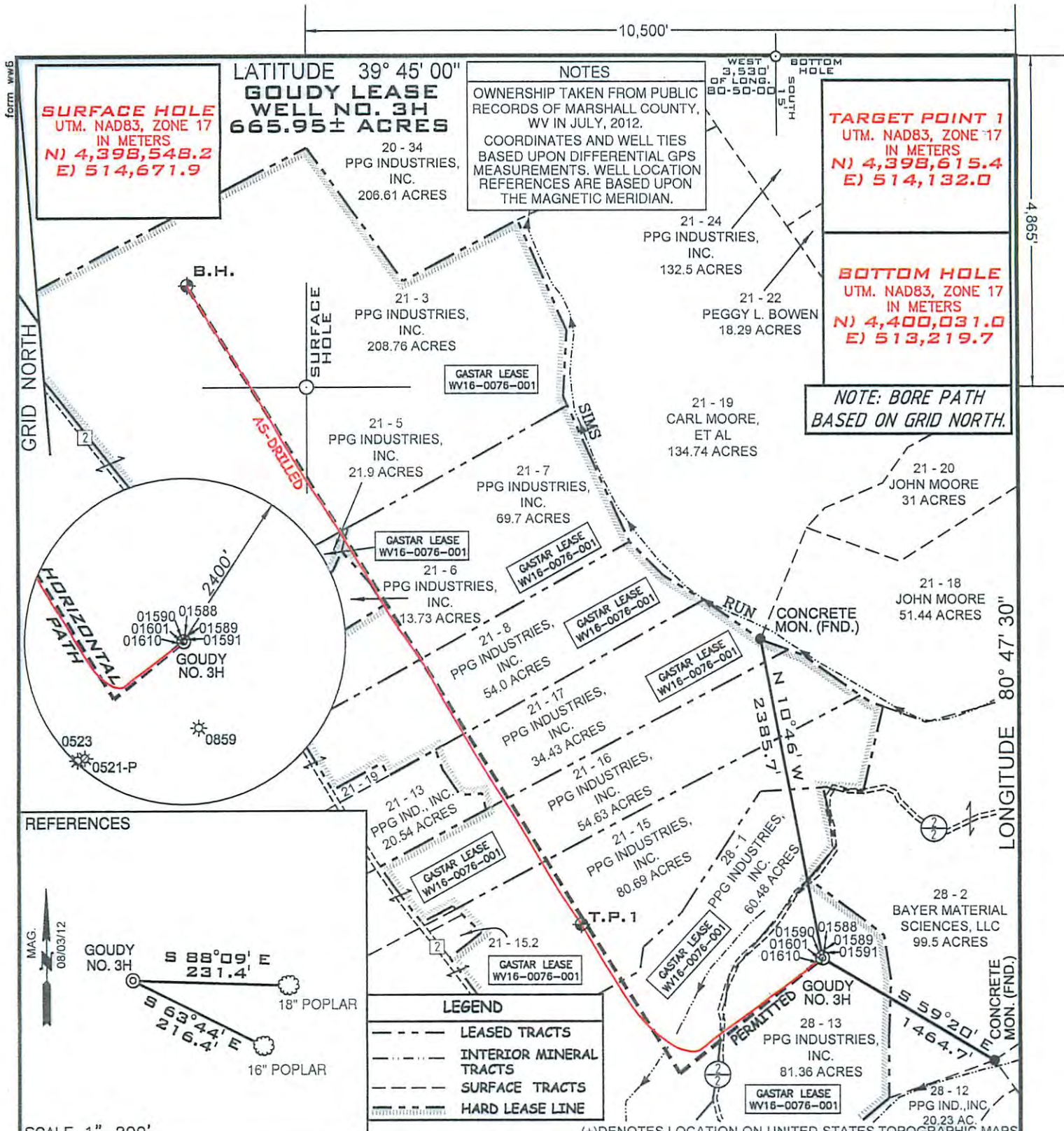
SURFACE OWNER PPG INDUSTRIES, INC. ACREAGE 81.36
 OIL & GAS ROYALTY OWNER PPG INDUSTRIES, INC. LEASE ACREAGE 665.95

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE (SPECIFY) _____

TARGET FORMATION MARCELLUS PLUG & ABANDON CLEAN OUT & REPLUG
 ESTIMATED DEPTH TVD 6,413' TMD 13,177'

WELL OPERATOR GASTAR EXPLORATION INC. DESIGNATED AGENT MICHAEL McCOWN
 ADDRESS 229 W MAIN STREET, SUITE 301 CLARKSBURG WV, 26301 ADDRESS 229 W MAIN STREET, SUITE 301 CLARKSBURG WV, 26301

COUNTY NAME
 PERMIT



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WV Department of Environmental Protection
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 601 57TH STREET
 CHARLESTON, WV 25304

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
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LOCATION ELEVATION 1238' WATERSHED TRIBUTARY OF THE OHIO RIVER
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 ADDRESS 229 W MAIN STREET, SUITE 301 CLARKSBURG WV, 26301 ADDRESS 229 W MAIN STREET, SUITE 301 CLARKSBURG WV, 26301

COUNTY NAME
 PERMIT