WR-35
Rev. 8/23/13

API 47- 103 - 02982 Farm name M. B. INVESTMENTS Well number LACKAWANNA No. 1H

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	26"	20"	40'	New	PE, 54.5 #/ft.		Yes
Surface	17-1/2"	13-3/8"	1,287'	New	H-40, 48 #/ft.		Yes
Coal	17-1/2"	13-3/8"	1,287'	New	H-40, 48 #/ft.		Yes
Intermediate 1	12-1/4"	9-5/8"	2,755'	New	J-55, 36 #/ft.		Yes
Intermediate 2							
Intermediate 3							
Production	N/A						
Tubing							
Packer type and depth set		N/A					

Comment Details **See attached

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	65	15.6	1.21	78	Surface	12
Surface	Class A	933	15.6	1.21	1128	Surface	8
Coal	Class A	933	15.6	1.21	1128	Surface	8
Intermediate 1	Class A	954	15.6	1.19	1135	Surface	8
Intermediate 2							
Intermediate 3							
Production	N/A						
Tubing							

Drillers TD (ft) 5,685' Loggers TD (ft) N/A
Deepest formation penetrated Undifferentiated Formation (Below Benson) Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) N/A

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

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Well cored ☐ Yes ■ No Conventional Sidewall Were cuttings collected ☐ Yes ■ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING
Surface/Coal - 3 Centralizers at 300' Spacing
Intermediate - 7 Centralizers at 300' Spacing

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

WR-35
Rev. 8/23/13

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

API 47 - 103 - 02982 County WETZEL District MAGNOLIA
Quad PORTERS FALLS 7.5' Pad Name LACKAWANNA Field/Pool Name
Farm name M. B. INVESTMENTS Well Number LACKAWANNA No. 1H
Operator (as registered with the OOG) GASTAR EXPLORATION USA, INC.
Address 229 W MAIN STREET - STE 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 4,384,061.53	Easting 512,302.15
Landing Point of Curve	Northing N/A	Easting N/A
Bottom Hole	Northing 4,384,231.42	Easting 512,362.50

Elevation (ft) 1306' 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 N/A
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud □Fresh Water Intermediate hole ■ Air □ Mud □ Fresh Water □ Production hole □ Air □ Mud □ Fresh Water □ Brine

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Mud Type(s) and Additive(s)
N/A

Date permit issued 6/10/2014 Date drilling commenced 10/09/2014 Date drilling ceased 10/23/14
Date completion activities began N/A Date completion activities ceased N/A
Verbal plugging (Y/N) 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 1,125' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,777' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,022'-1,026' & 1,117'-1,125' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: DHH

Reviewed

WR-35
Rev. 8/23/13

API 47- 103 - 02982 Farm name M. B. INVESTMENTS Well number LACKAWANNA No. 1H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	N/A				

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)
	N/A							

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Please insert additional pages as applicable.

API 47- 103 - 02982 Farm name M. B. INVESTMENTS Well number LACKAWANNA No. 1H

PRODUCING FORMATION(S)	DEPTHS	
N/A	TVD	MD

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown □ Open Flow OIL TEST □ Flow □ Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY □ Estimated □ Orifice □ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT 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_2S, ETC)
**See Attached	0		0		

Please insert additional pages as applicable.

Drilling Contractor Noah Horn
Address 1070 Sandy Valley Lane City Oakwood State VA Zip 24631

Logging Company N/A
Address _____ City _____ State _____ Zip _____

Cementing Company Baker Hughes
Address 17021 Aldine Westfield City Houston State TX Zip 77073

Stimulating Company N/A
Address _____ City _____ State _____ Zip _____

Please insert additional pages as applicable.

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Completed by Jonathan White Telephone 724-749-8388
Signature Jonathan White Title Regulatory Analyst Date 05/01/2017

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

GASTAR EXPLORATION USA, INC.

Location: Wetzel County, WV
Field: Wetzel
Facility: Lackawanna Unit Pad

Slot: Slot #1
Well: Lackawanna NO.1H
Wellbore: Lackawanna NO. 1H

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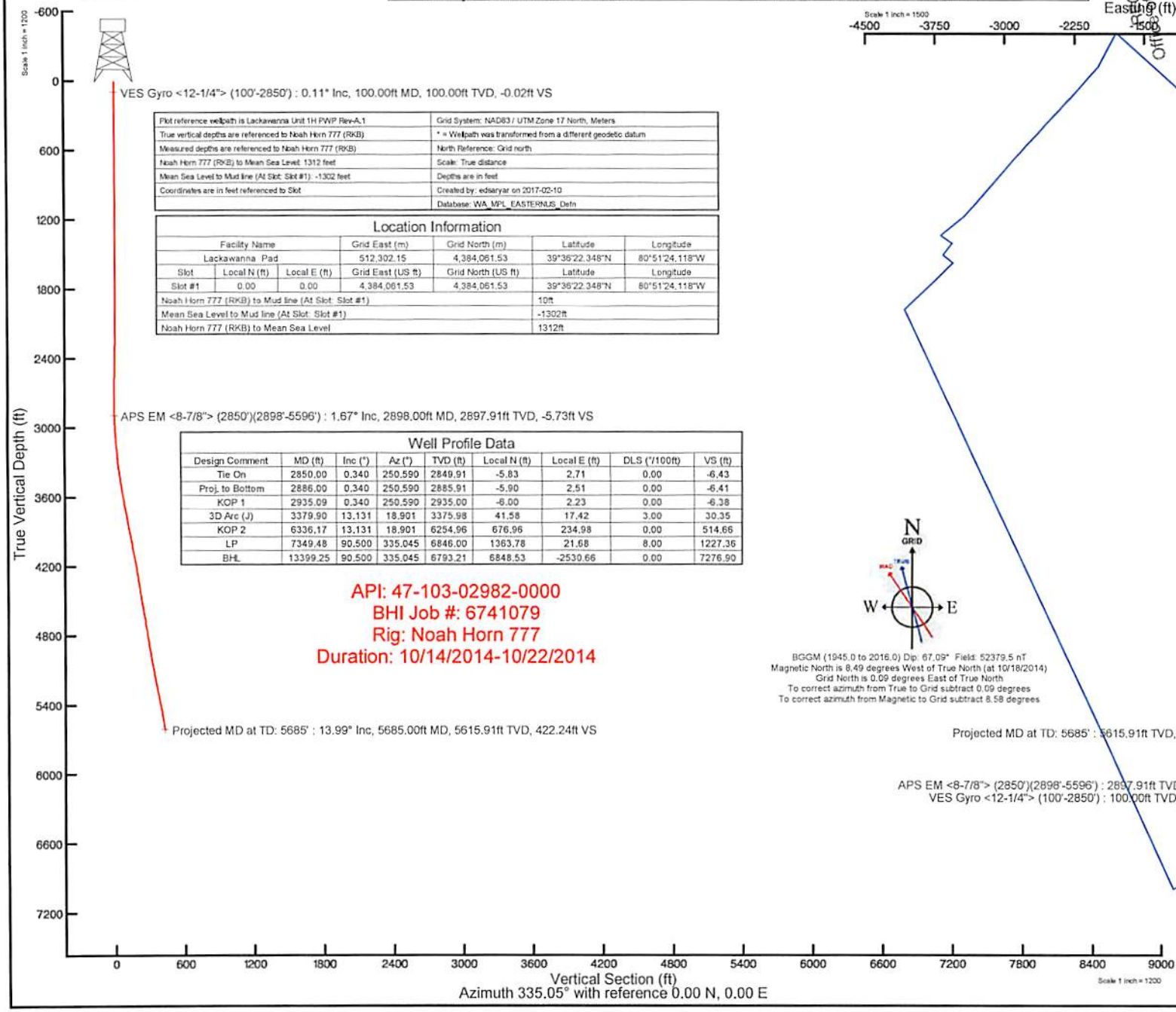
BAKER HUGHES



Plot reference wellpath is Lackawanna Unit 1H PWP Rev-A.1	Grid System: NAD83 / UTM Zone 17 North, Meters
True vertical depths are referenced to Noah Horn 777 (RKB)	* = Wellpath was transformed from a different geodetic datum
Measured depths are referenced to Noah Horn 777 (RKB)	North Reference: Grid north
Noah Horn 777 (RKB) to Mean Sea Level: 1312 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: Slot #1): -1302 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: edsaryar on 2017-02-10
	Database: WA_MPL_EASTERNUS_Defn

Location Information

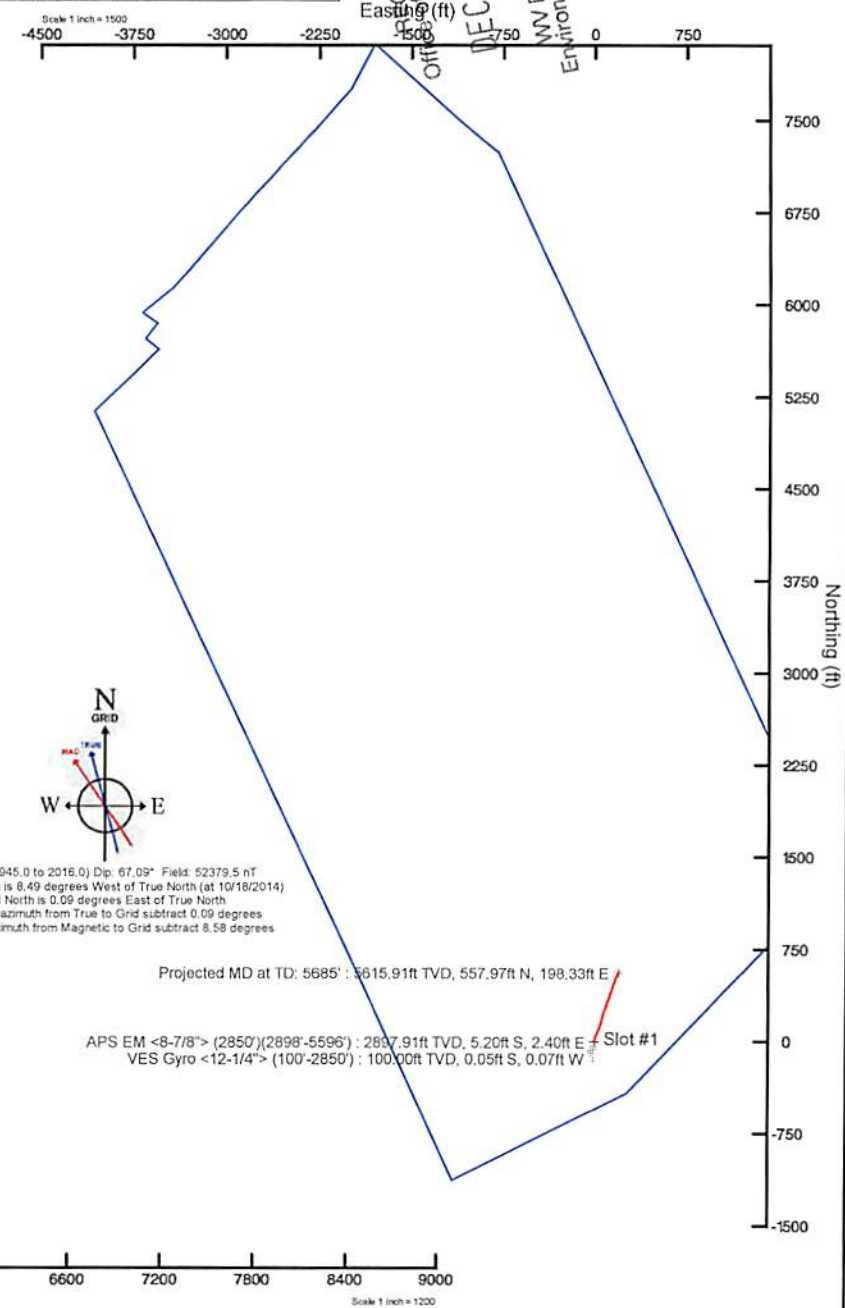
Facility Name			Grid East (m)	Grid North (m)	Latitude	Longitude
Lackawanna Pad			512,302.15	4,384,061.53	39°36'22.348"N	80°51'24.118"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot #1	0.00	0.00	4,384,061.53	4,384,061.53	39°36'22.348"N	80°51'24.118"W
Noah Horn 777 (RKB) to Mud line (At Slot: Slot #1)					10ft	
Mean Sea Level to Mud line (At Slot: Slot #1)					-1302ft	
Noah Horn 777 (RKB) to Mean Sea Level					1312ft	

Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	2850.00	0.340	250.590	2849.91	-5.83	2.71	0.00	-6.43
Proj. to Bottom	2886.00	0.340	250.590	2885.91	-5.90	2.51	0.00	-6.41
KOP 1	2935.09	0.340	250.590	2935.00	-6.00	2.23	0.00	-6.38
3D Arc (J)	3379.90	13.131	18.901	3375.98	41.58	17.42	3.00	30.35
KOP 2	6336.17	13.131	18.901	6254.96	676.96	234.98	0.00	514.66
LP	7349.48	90.500	335.045	6846.00	1363.78	21.68	8.00	1227.36
BHL	13399.25	90.500	335.045	6793.21	6848.53	-2530.66	0.00	7276.90

API: 47-103-02982-0000
BHI Job #: 6741079
Rig: Noah Horn 777
Duration: 10/14/2014-10/22/2014

BGGM (1945.0 to 2016.0) Dip: 67.09° Field: 52379.5 nT
Magnetic North is 8.49 degrees West of True North (at 10/18/2014)
Grid North is 0.09 degrees East of True North
To correct azimuth from True to Grid subtract 0.09 degrees
To correct azimuth from Magnetic to Grid subtract 8.58 degrees



Actual Wellpath Report (CSV ver.)
Prepared by Baker Hughes
Software System: WellArchitect 4.0.1

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REFERENCE WELLPATH IDENTIFICATION			
Operator	GASTAR EXPLORATION USA INC.	Slot	Slot #1
Area	Marshall County, WV	Well	Lackawnna 1H
Field	Marshall	Wellbore	Lackawnna 1H (AWB)
Facility	Lackawanna Unit	Wellpath	Lackawnna 1H (AWP) Proj: 5,685'
		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]
†	0.00	0.00	231.09	0.00	0.00	0.00	0.00	512302.2	4384061.5	39°36'22.348"N	80°51'24.118"W	0.00	0.00	0.00
	10.00	0.00	231.09	10.00	0.00	0.00	0.00	512302.2	4384061.5	39°36'22.348"N	80°51'24.118"W	0.00	0.00	0.00
	100.00	0.11	231.09	100.00	-0.02	-0.05	-0.07	512302.2	4384061.5	39°36'22.347"N	80°51'24.119"W	0.09	231.09	0.12
	200.00	0.42	287.04	200.00	0.20	-0.01	-0.49	512301.9	4384061.4	39°36'22.348"N	80°51'24.124"W	0.49	269.17	0.37
	300.00	0.36	309.38	300.00	0.73	0.30	-1.09	512301.7	4384061.5	39°36'22.351"N	80°51'24.132"W	1.13	285.43	0.16
	400.00	0.29	330.34	400.00	1.26	0.72	-1.45	512301.6	4384061.6	39°36'22.355"N	80°51'24.136"W	1.62	296.31	0.14
	500.00	0.44	284.90	499.99	1.76	1.04	-1.95	512301.5	4384061.7	39°36'22.358"N	80°51'24.143"W	2.21	298.02	0.31
	600.00	0.23	284.84	599.99	2.14	1.19	-2.52	512301.3	4384061.8	39°36'22.359"N	80°51'24.150"W	2.78	295.28	0.21
	700.00	0.11	308.84	699.99	2.35	1.30	-2.78	512301.2	4384061.8	39°36'22.361"N	80°51'24.153"W	3.07	295.02	0.14
	800.00	0.07	207.12	799.99	2.40	1.31	-2.89	512301.2	4384061.8	39°36'22.361"N	80°51'24.155"W	3.17	294.33	0.14
	900.00	0.17	107.20	899.99	2.26	1.21	-2.77	512301.2	4384061.8	39°36'22.360"N	80°51'24.153"W	3.02	293.52	0.19
	1000.00	0.19	121.02	999.99	2.03	1.08	-2.49	512301.3	4384061.7	39°36'22.358"N	80°51'24.150"W	2.71	293.41	0.05
	1100.00	0.22	136.23	1099.99	1.71	0.85	-2.21	512301.4	4384061.7	39°36'22.356"N	80°51'24.146"W	2.37	291.08	0.06
	1200.00	0.19	211.45	1199.99	1.43	0.57	-2.17	512301.4	4384061.6	39°36'22.353"N	80°51'24.146"W	2.24	284.82	0.25
	1300.00	0.44	198.33	1299.99	1.06	0.07	-2.37	512301.4	4384061.4	39°36'22.348"N	80°51'24.148"W	2.38	271.63	0.26
	1400.00	0.36	189.48	1399.99	0.52	-0.61	-2.55	512301.3	4384061.2	39°36'22.342"N	80°51'24.150"W	2.62	256.60	0.10
	1500.00	0.18	220.25	1499.98	0.20	-1.04	-2.70	512301.3	4384061.1	39°36'22.337"N	80°51'24.152"W	2.89	249.00	0.23
	1600.00	0.05	202.88	1599.98	0.10	-1.20	-2.82	512301.2	4384061.1	39°36'22.336"N	80°51'24.154"W	3.06	247.00	0.13
	1700.00	0.23	308.93	1699.98	0.25	-1.11	-2.99	512301.2	4384061.1	39°36'22.337"N	80°51'24.156"W	3.19	249.63	0.25
	1800.00	0.37	334.34	1799.98	0.76	-0.69	-3.29	512301.1	4384061.2	39°36'22.341"N	80°51'24.160"W	3.36	258.09	0.19
	1900.00	0.35	317.74	1899.98	1.37	-0.18	-3.63	512301.0	4384061.4	39°36'22.346"N	80°51'24.164"W	3.64	267.22	0.11
	2000.00	0.11	215.70	1999.98	1.62	-0.03	-3.89	512300.9	4384061.4	39°36'22.347"N	80°51'24.168"W	3.89	269.58	0.39
	2100.00	0.78	131.41	2099.98	0.95	-0.56	-3.44	512301.0	4384061.2	39°36'22.342"N	80°51'24.162"W	3.48	260.81	0.78
	2200.00	0.77	125.25	2199.97	-0.26	-1.39	-2.38	512301.3	4384061.0	39°36'22.334"N	80°51'24.148"W	2.76	239.64	0.08
	2300.00	1.03	124.37	2299.95	-1.62	-2.29	-1.09	512301.7	4384060.7	39°36'22.325"N	80°51'24.132"W	2.54	205.46	0.26
	2400.00	1.02	123.23	2399.94	-3.15	-3.29	0.40	512302.2	4384060.4	39°36'22.315"N	80°51'24.113"W	3.31	173.13	0.02
	2500.00	0.94	121.23	2499.92	-4.58	-4.20	1.84	512302.6	4384060.1	39°36'22.306"N	80°51'24.094"W	4.58	156.31	0.09

Actual Wellpath Report (CSV ver.)
Prepared by Baker Hughes
Software System: WellArchitect 4.0.1

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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]
2600.00	0.45	143.60	2599.92	-5.65	-4.94	2.78	512302.9	4384059.9	39°36'22.299"N	80°51'24.082"W	5.67	150.66	0.55
2700.00	0.11	132.72	2699.92	-6.12	-5.32	3.08	512303.0	4384059.8	39°36'22.295"N	80°51'24.079"W	6.15	149.94	0.34
2800.00	0.38	217.52	2799.91	-6.37	-5.65	2.95	512303.0	4384059.7	39°36'22.292"N	80°51'24.080"W	6.37	152.44	0.39
2850.00	0.34	250.59	2849.91	-6.43	-5.83	2.71	512302.9	4384059.6	39°36'22.290"N	80°51'24.083"W	6.43	155.09	0.42
2898.00	1.67	345.79	2897.91	-5.73	-5.20	2.40	512302.8	4384059.8	39°36'22.296"N	80°51'24.087"W	5.73	155.21	3.61
2930.00	2.51	352.15	2929.89	-4.60	-4.05	2.19	512302.7	4384060.2	39°36'22.308"N	80°51'24.090"W	4.61	151.60	2.72
2961.00	3.28	355.84	2960.85	-3.12	-2.50	2.03	512302.7	4384060.7	39°36'22.323"N	80°51'24.092"W	3.22	140.82	2.55
2992.00	4.18	1.02	2991.78	-1.28	-0.48	1.99	512302.7	4384061.3	39°36'22.343"N	80°51'24.092"W	2.05	103.61	3.10
3024.00	4.89	3.18	3023.68	0.98	2.05	2.09	512302.7	4384062.0	39°36'22.368"N	80°51'24.091"W	2.92	45.56	2.28
3055.00	5.74	7.84	3054.55	3.44	4.90	2.37	512302.8	4384062.9	39°36'22.396"N	80°51'24.087"W	5.44	25.82	3.07
3085.00	6.43	11.27	3084.38	6.06	8.03	2.90	512303.0	4384063.9	39°36'22.427"N	80°51'24.081"W	8.54	19.87	2.60
3116.00	6.41	17.79	3115.18	8.73	11.39	3.77	512303.2	4384064.9	39°36'22.460"N	80°51'24.069"W	11.99	18.33	2.35
3148.00	6.98	20.77	3146.96	11.40	14.90	5.01	512303.6	4384066.0	39°36'22.495"N	80°51'24.054"W	15.72	18.57	2.09
3178.00	7.33	21.55	3176.73	13.99	18.39	6.36	512304.0	4384067.0	39°36'22.529"N	80°51'24.036"W	19.46	19.07	1.21
3210.00	8.00	22.64	3208.44	16.90	22.34	7.96	512304.5	4384068.2	39°36'22.568"N	80°51'24.016"W	23.72	19.62	2.14
3241.00	7.91	23.09	3239.15	19.78	26.30	9.63	512305.0	4384069.4	39°36'22.607"N	80°51'23.994"W	28.00	20.12	0.35
3273.00	7.51	21.96	3270.86	22.68	30.26	11.28	512305.5	4384070.6	39°36'22.647"N	80°51'23.973"W	32.29	20.44	1.34
3305.00	7.85	19.73	3302.57	25.66	34.26	12.80	512306.0	4384071.9	39°36'22.686"N	80°51'23.954"W	36.57	20.48	1.41
3336.00	8.46	20.07	3333.26	28.78	38.39	14.29	512306.4	4384073.1	39°36'22.727"N	80°51'23.934"W	40.97	20.42	1.97
3368.00	9.25	19.87	3364.87	32.27	43.02	15.98	512306.9	4384074.5	39°36'22.773"N	80°51'23.913"W	45.89	20.37	2.47
3401.00	10.68	20.47	3397.38	36.30	48.38	17.95	512307.5	4384076.2	39°36'22.826"N	80°51'23.888"W	51.60	20.35	4.34
3432.00	11.61	23.60	3427.79	40.38	53.93	20.20	512308.2	4384077.9	39°36'22.880"N	80°51'23.859"W	57.59	20.53	3.58
3526.00	14.21	22.91	3519.41	54.38	73.23	28.48	512310.8	4384083.7	39°36'23.071"N	80°51'23.752"W	78.57	21.25	2.77
3620.00	13.41	20.74	3610.69	69.74	94.05	36.83	512313.3	4384090.1	39°36'23.277"N	80°51'23.645"W	101.00	21.39	1.01
3715.00	13.97	19.39	3702.99	85.63	115.17	44.54	512315.6	4384096.5	39°36'23.485"N	80°51'23.546"W	123.48	21.14	0.68
3809.00	14.11	16.97	3794.18	102.27	136.83	51.65	512317.8	4384103.1	39°36'23.699"N	80°51'23.455"W	146.26	20.68	0.64
3905.00	13.51	13.93	3887.41	119.71	158.91	57.77	512319.7	4384109.8	39°36'23.917"N	80°51'23.377"W	169.08	19.98	0.98
3999.00	13.64	15.16	3978.78	136.74	180.26	63.31	512321.4	4384116.3	39°36'24.128"N	80°51'23.305"W	191.06	19.35	0.34
4093.00	14.33	15.21	4070.00	154.10	202.19	69.26	512323.2	4384123.0	39°36'24.345"N	80°51'23.229"W	213.72	18.91	0.73
4188.00	14.61	18.65	4161.98	171.76	224.88	76.17	512325.3	4384129.9	39°36'24.569"N	80°51'23.140"W	237.43	18.71	0.95
4284.00	13.50	23.71	4255.11	187.93	246.62	84.55	512327.8	4384136.6	39°36'24.784"N	80°51'23.033"W	260.71	18.92	1.72
4379.00	12.51	20.09	4347.68	202.53	266.43	92.55	512330.3	4384142.6	39°36'24.979"N	80°51'22.930"W	282.05	19.16	1.35
4474.00	11.61	15.33	4440.58	217.09	285.32	98.61	512332.1	4384148.3	39°36'25.166"N	80°51'22.852"W	301.87	19.07	1.41

Actual Wellpath Report (CSV ver.)
Prepared by Baker Hughes
Software System: WellArchitect 4.0.1

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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]
4568.00	12.43	18.93	4532.52	231.60	304.01	104.39	512333.9	4384154.0	39°36'25.351"N	80°51'22.778"W	321.43	18.95	1.18
4662.00	12.98	18.51	4624.22	246.56	323.59	111.02	512335.9	4384160.0	39°36'25.544"N	80°51'22.693"W	342.10	18.94	0.59
4756.00	12.70	19.22	4715.87	261.63	343.36	117.78	512338.0	4384166.0	39°36'25.739"N	80°51'22.606"W	362.99	18.93	0.34
4851.00	12.72	18.93	4808.54	276.66	363.11	124.61	512340.0	4384172.1	39°36'25.934"N	80°51'22.518"W	383.89	18.94	0.07
4933.00	12.81	16.05	4888.51	290.03	380.39	130.05	512341.7	4384177.3	39°36'26.105"N	80°51'22.448"W	402.00	18.88	0.78
5027.00	13.51	22.71	4980.05	305.29	400.53	137.17	512343.9	4384183.5	39°36'26.304"N	80°51'22.357"W	423.37	18.91	1.78
5122.00	14.69	19.79	5072.19	321.32	422.10	145.53	512346.4	4384190.0	39°36'26.517"N	80°51'22.250"W	446.49	19.02	1.45
5216.00	15.41	18.13	5162.96	338.91	445.19	153.45	512348.8	4384197.1	39°36'26.745"N	80°51'22.148"W	470.89	19.02	0.89
5311.00	15.38	19.18	5254.56	357.17	469.08	161.52	512351.3	4384204.3	39°36'26.981"N	80°51'22.045"W	496.11	19.00	0.30
5407.00	15.88	20.65	5347.01	375.50	493.39	170.33	512354.0	4384211.7	39°36'27.221"N	80°51'21.931"W	521.97	19.05	0.66
5501.00	15.10	20.59	5437.59	393.07	516.89	179.18	512356.7	4384218.9	39°36'27.453"N	80°51'21.818"W	547.06	19.12	0.83
5596.00	13.99	26.65	5529.55	408.87	538.74	188.68	512359.6	4384225.6	39°36'27.669"N	80°51'21.696"W	570.82	19.30	1.98
5685.00	13.99	26.65	5615.91	422.24	557.97	198.33	512362.5	4384231.4	39°36'27.859"N	80°51'21.572"W	592.17	19.57	0.00

Lackawanna 1H Cement Additives

Surface: Class A + 3% CaCl + ¼ #per sack flake

Coal: Class A + 3% CaCl + ¼ #per sack flake

Intermediate: Class A + 1% EC-1 + ¼ per sack flake + .5% SMS + .55% BA-10A

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Lackawanna 1H Drilling & Casing Summary

The Lackawanna 1H well was initially drilled to a depth of 40' feet utilizing a 30 inch bit. 20 inch conductor pipe was installed and cemented to surface. The well was then drilled to 1330' MD utilizing a 17 ½" bit. 13 3/8" casing was installed to 1286' MD and cemented to surface. The well was then drilled to 2754' MD utilizing a 12 ¼" bit. 9 5/8" casing was then installed to 2747' MD and cemented to surface. The well was then drilled to a total depth of 5685' MD utilizing a 8 7/8" bit. The well was subsequently filled with 9.5 lb/gal brine water and capped to await additional drilling.

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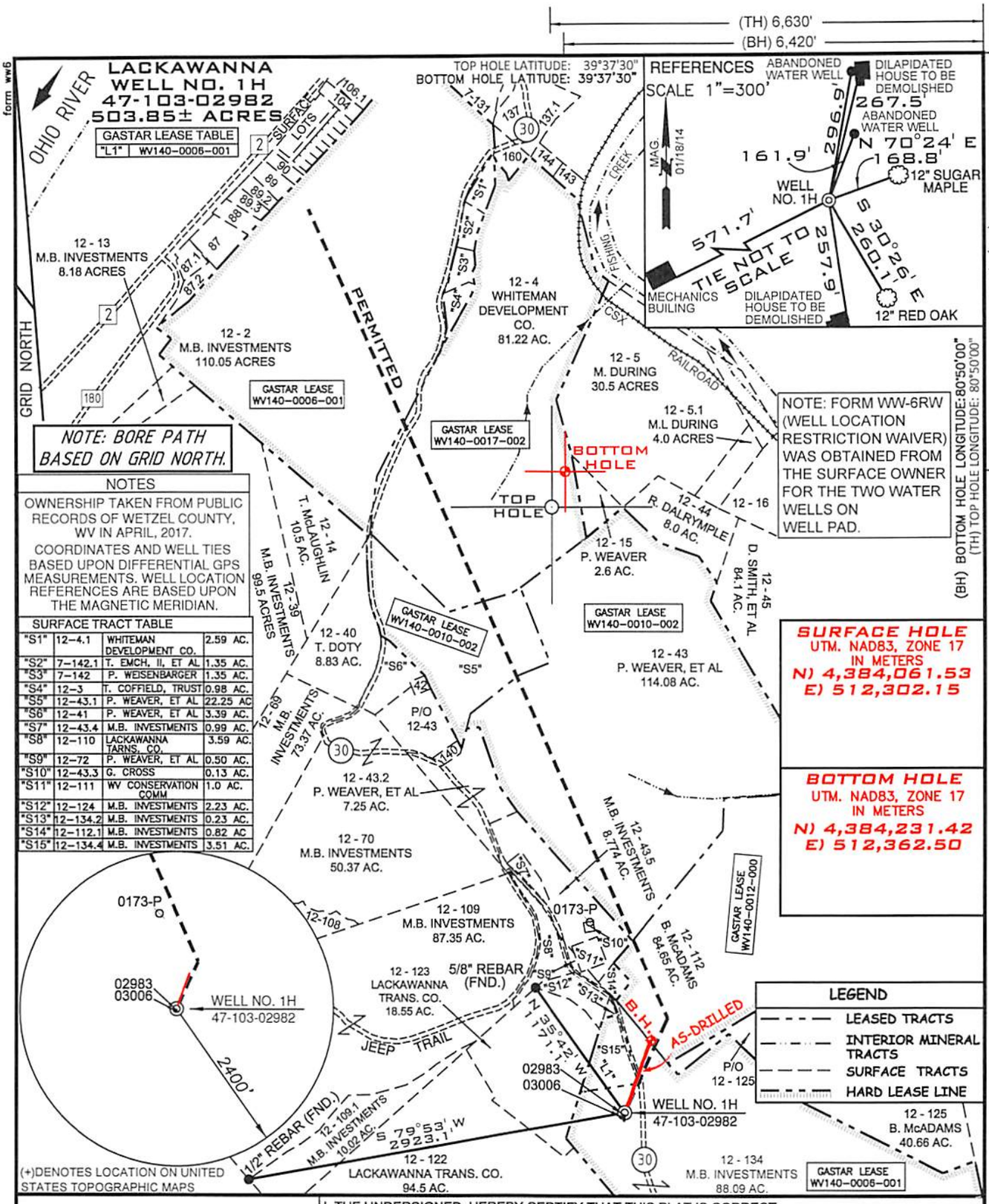

NOTES

OWNERSHIP TAKEN FROM PUBLIC RECORDS OF WETZEL COUNTY, WV IN APRIL, 2017.
COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS. WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.

SURFACE TRACT TABLE

"S1"	12-4.1	WHITEMAN DEVELOPMENT CO.	2.59 AC.
"S2"	7-142.1	T. EMCH, II, ET AL	1.35 AC.
"S3"	7-142	P. WEISENBARGER	1.35 AC.
"S4"	12-3	T. COFFIELD, TRUST	0.98 AC.
"S5"	12-43.1	P. WEAVER, ET AL	22.25 AC
"S6"	12-41	P. WEAVER, ET AL	3.39 AC.
"S7"	12-43.4	M.B. INVESTMENTS	0.99 AC.
"S8"	12-110	LACKAWANNA TARNS. CO.	3.59 AC.
"S9"	12-72	P. WEAVER, ET AL	0.50 AC.
"S10"	12-43.3	G. CROSS	0.13 AC.
"S11"	12-111	WV CONSERVATION COMM	1.0 AC.
"S12"	12-124	M.B. INVESTMENTS	2.23 AC.
"S13"	12-134.2	M.B. INVESTMENTS	0.23 AC.
"S14"	12-112.1	M.B. INVESTMENTS	0.82 AC
"S15"	12-134.4	M.B. INVESTMENTS	3.51 AC.

FILE NUMBER W0110309
DRAWING NUMBER LACKAWANNA_WP_1H-AD
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

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DEC 4 2017
WV Department of Environmental Protection

Jonathan N. White
LICENSED
NO. 2122
STATE OF WEST VIRGINIA
PROFESSIONAL SURVEYOR
SEAL

STATE OF WEST VIRGINIA
MONTANI SEMPER LIBERI

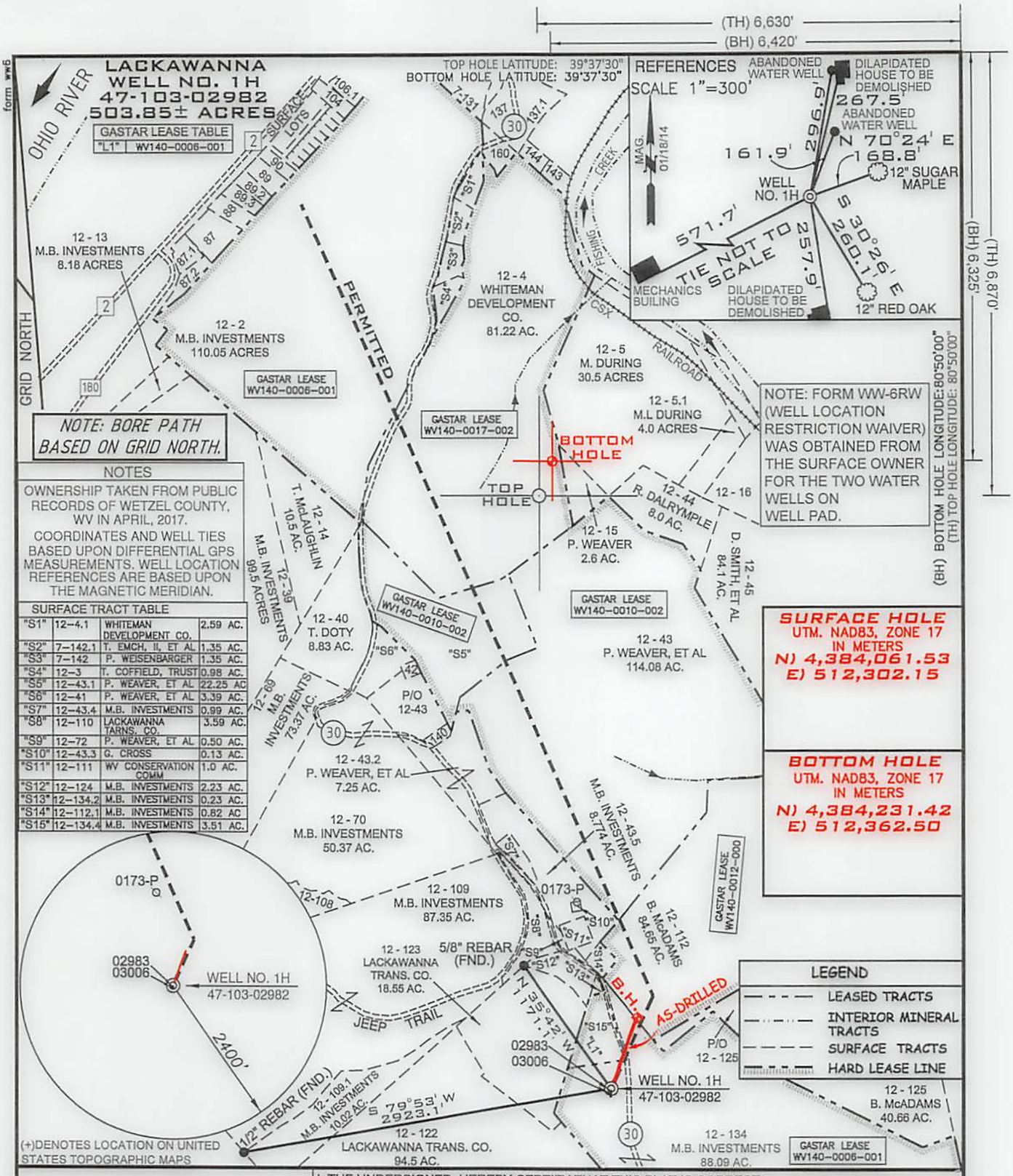
WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

DATE: APRIL 30, 2017
OPERATORS WELL NO. LACKAWANNA NO. 1H AS-DRILLED
API WELL NO. 47 — 103 — 02982
STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION ELEVATION 1306' WATERSHED (HUC 10) OUTLET MIDDLE ISLAND CREEK (UNDEFINDED)
DISTRICT MAGNOLIA COUNTY WETZEL
QUADRANGLE PORTERS FALLS 7.5' LEASE NUMBER WV140-0017-002 / WV140-0006-001, WV140-0010-002, WV140-0012-000
SURFACE OWNER M.B. INVESTMENTS ACREAGE 88.09
OIL & GAS ROYALTY OWNER M.B. INVESTMENTS, ET AL LEASE ACREAGE 503.85
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 Undifferentiated Formation (Below Benson) ESTIMATED DEPTH TVD: 5,615' TMD: 5,685'
WELL OPERATOR GASTAR EXPLORATION USA, 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

form ww6



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P.S. 2122 Jonathan N. White

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