



 west virginia department of environmental protection

Office of Oil and Gas
 601 57th Street, S.E.
 Charleston, WV 25304
 (304) 926-0450
 fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Friday, February 8, 2019
 WELL WORK PERMIT
 Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
 380 SOUTHPOINTE BLVD

CANONSBURG, PA 15317

Re: Permit approval for WHISTLEPIG N-6HM
 47-051-02139-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
 Chief

Operator's Well Number: WHISTLEPIG N-6HM
 Farm Name: ROBERT L. & REBECCA SHI
 U.S. WELL NUMBER: 47-051-02139-00-00
 Horizontal 6A New Drill
 Date Issued: 2/8/2019

PERMIT CONDITIONS

West Virginia Code § 22-6A-8(d) allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

CONDITIONS

1. This proposed activity may require permit coverage from the United States Army Corps of Engineers (USACE). Through this permit, you are hereby being advised to consult with USACE regarding this proposed activity.
2. If the operator encounters an unanticipated void, or an anticipated void at an unanticipated depth, the operator shall notify the inspector within 24 hours. Modifications to the casing program may be necessary to comply with W. Va. Code § 22-6A-5a (12), which requires drilling to a minimum depth of thirty feet below the bottom of the void, and installing a minimum of twenty (20) feet of casing. Under no circumstance should the operator drill more than one hundred (100) feet below the bottom of the void or install less than twenty (20) feet of casing below the bottom of the void.
3. When compacting fills, each lift before compaction shall not be more than 12 inches in height, and the moisture content of the fill material shall be within limits as determined by the Standard Proctor Density test of the actual soils used in specific engineered fill, ASTM D698, Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort, to achieve 95 % compaction of the optimum density. Each lift shall be tested for compaction, with a minimum of two tests per lift per acre of fill. All test results shall be maintained on site and available for review.
4. Operator shall install signage per § 22-6A-8g (6) (B) at all source water locations included in their approved water management plan within 24 hours of water management plan activation.
5. Oil and gas water supply wells will be registered with the Office of Oil and Gas and all such wells will be constructed and plugged in accordance with the standards of the Bureau for Public Health set forth in its Legislative rule entitled *Water Well Regulations*, 64 C.S.R. 19. Operator is to contact the Bureau of Public Health regarding permit requirements. In lieu of plugging, the operator may transfer the well to the surface owner upon agreement of the parties. All drinking water wells within fifteen hundred feet of the water supply well shall be flow tested by the operator upon request of the drinking well owner prior to operating the water supply well.
6. Pursuant to the requirements pertaining to the sampling of domestic water supply wells/springs the operator shall, no later than thirty (30) days after receipt of analytical data provide a written copy to the Chief and any of the users who may have requested such analyses.
7. 24 hours prior to the initiation of the completion process the operator shall notify the Chief or his designee.
8. During the completion process the operator shall monitor annular pressures and report any anomaly noticed to the chief or his designee immediately.
9. If any explosion or other accident causing loss of life or serious personal injury occurs in or about a well or well work on a well, the well operator or its contractor shall give notice, stating the particulars of the explosion or accident, to the oil and gas inspector and the Chief, within 24 hours of said accident.
10. During the casing and cementing process, in the event cement does not return to the surface, the oil and gas inspector shall be notified within 24 hours.

PERMIT CONDITIONS

11. The operator shall provide to the Office of Oil and Gas the dates of each of the following within 30 days of their occurrence: completion of construction of the well pad, commencement of drilling, cessation of drilling, completion of any other permitted well work, and completion of the well. Such notice shall be provided by sending an email to DEPOOGNotify@wv.gov.

WW-6B
(04/15)

API NO. 47-051 -
OPERATOR WELL NO. Whistlepig N-6HM
Well Pad Name: Hoyt

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: Tug Hill Operating, LLC 494510851 Marshall Franklin Powhatan Point 7
Operator ID County District Quadrangle

2) Operator's Well Number: Whistlepig N-6HM Well Pad Name: Hoyt

3) Farm Name/Surface Owner: Ula F. Nelson Public Road Access: Burch Ridge Road (CR 29)

4) Elevation, current ground: 1367.40' Elevation, proposed post-construction: 1367.40'

5) Well Type (a) Gas x Oil _____ Underground Storage _____
Other _____

(b) If Gas Shallow x _____ Deep _____
Horizontal x _____

6) Existing Pad: Yes or No Yes

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11/29/18

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6537' - 6589', thickness of 52' and an anticipated approx. pressure of 3800 psi.

8) Proposed Total Vertical Depth: 6689'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 13,708'

11) Proposed Horizontal Leg Length: 5,596'

12) Approximate Fresh Water Strata Depths: 70', 973'

13) Method to Determine Fresh Water Depths: Use shallow offset wells to determine deepest freshwater. Or determine using predrill tests, testing while drilling or petrophysical evaluation of resistivity

14) Approximate Saltwater Depths: 1,740'

15) Approximate Coal Seam Depths: Sewickley Coal - 867' and Pittsburgh Coal - 967'

16) Approximate Depth to Possible Void (coal mine, karst, other): None

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17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes _____ No x

WV Department of
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(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

WW-6B
(04/15)

API NO. 47-051 -
OPERATOR WELL NO. Whistlepig N-6HM
Well Pad Name: Hoyt

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259ft^3(CTS)
Fresh Water	13 3/8"	NEW	J55	54.5#	1076'	1076'	1098ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	1076'	1076'	1098ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2804'	2804'	932ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	13,708'	13,708'	3508ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#	6,956'		
Liners							

Handwritten signature
11/29/18

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17.5"	.33	2,740	2,192	SEE#24	1.2
Coal	13 3/8"	17.5"	.33	2,740	2,192	SEE #24	1.2
Intermediate	9 5/8"	12 1/4"	.352	3,520	2,816	SEE #24	1.19
Production	5 1/2"	8 7/8_8 3/4	.361	12,640	10,112	SEE #24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

PACKERS

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Kind:	N/A			
Sizes:	N/A			
Depths Set:	N/A			

WW-6B
(10/14)

API NO. 47- 051 -
OPERATOR WELL NO. Whistlepig N-6HM
Well Pad Name: Hoyt

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11/29/18

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill through the Marcellus tagging less than 100' from the top of the Onondata to get depths and log data. Plug back to proposed kick off point. Drill the horizontal section to planned and proposed TD. Run casing and cement to surface. Run Bond Log from app. 60 deg to surface. Make clean out run and stimulate.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

Well to be completed with approximately 13,990,000 lb. proppant and 216,296 barrels of water. Max rate = 80bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 21.74 acres

22) Area to be disturbed for well pad only, less access road (acres): 6.58 acres

23) Describe centralizer placement for each casing string:

Will run 3 centralizers on surface casing at equal distance. Intermediate will have 1 centralizer every other joint. Production casing will have one centralizer every other joint in lateral, one centralizer every joint through curve, one centralizer every other joint to surface.

24) Describe all cement additives associated with each cement type:

*See attachment

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25) Proposed borehole conditioning procedures:

Will circulate a minimum of 3 hours at TD, short trip to curve, circulate bottoms up, check for flow, POOH.

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*Note: Attach additional sheets as needed.

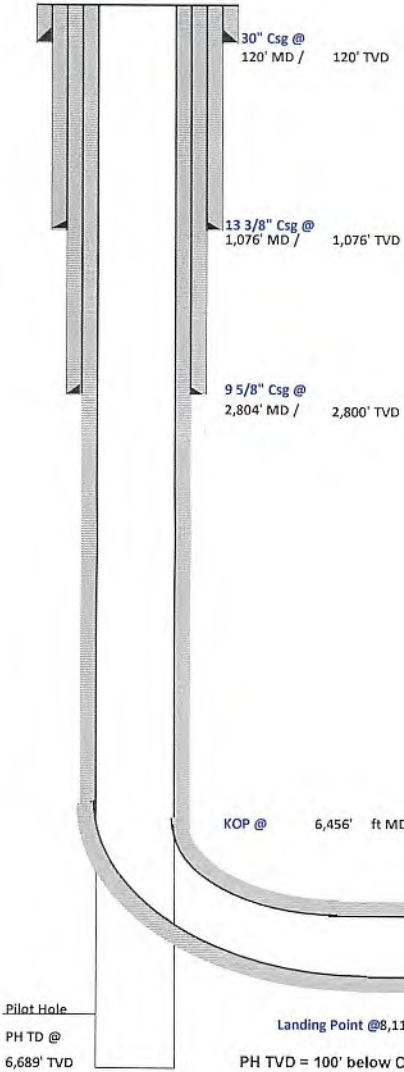


WELL NAME: Whistlepig N-6HM
 STATE: WV COUNTY: Marshall
 DISTRICT: #N/A
 DF Elev: 1,367' GL Elev: 1,367'
 TD: 13,708'
 TH Latitude: 39.77526165
 TH Longitude: -80.7930149
 BH Latitude: 39.780452
 BH Longitude: -80.81002305

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	973
Sewickley Coal	867
Pittsburgh Coal	967
Big Lime	2083
Weir	2471
Berea	2626
Gordon	2906
Rhinestreet	5947
Genesee/Burkett	6394
Tully	6478
Hamilton	6501
Marcellus	6537
Landing Depth	6596
Onondaga	6589
Pilot Hole Depth	6689

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	BW	BW	Surface
Surface	17.5	13 3/8	1,076'	1,076'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	2,804'	2,800'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	13,708'	6,498'	20	CYHP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,110	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	911	A	15	Air	1 Centralizer every other jt
Production	3,094	A	14.5	Air / SOBM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



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Tug Hill Operating, LLC Casing and Cement Program

Whistlepig N-6HM

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	J55	17 1/2"	1,076'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,804'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4"	13,708'	CTS

Cement

- Conductor: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Conductor Cement mixed at 15.6 ppg, Y=1.2
- Surface: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2
- Intermediate: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.19
- Kick Off Plug: Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L - KOP Plug
- Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.19

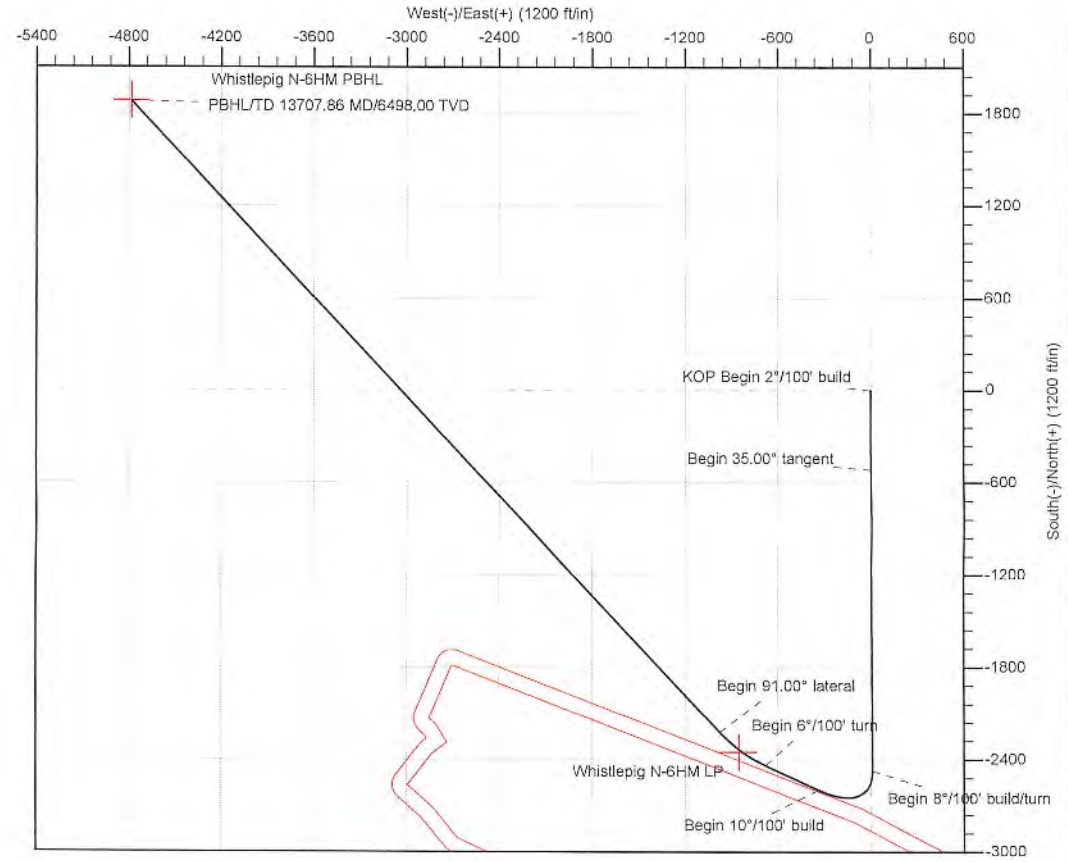
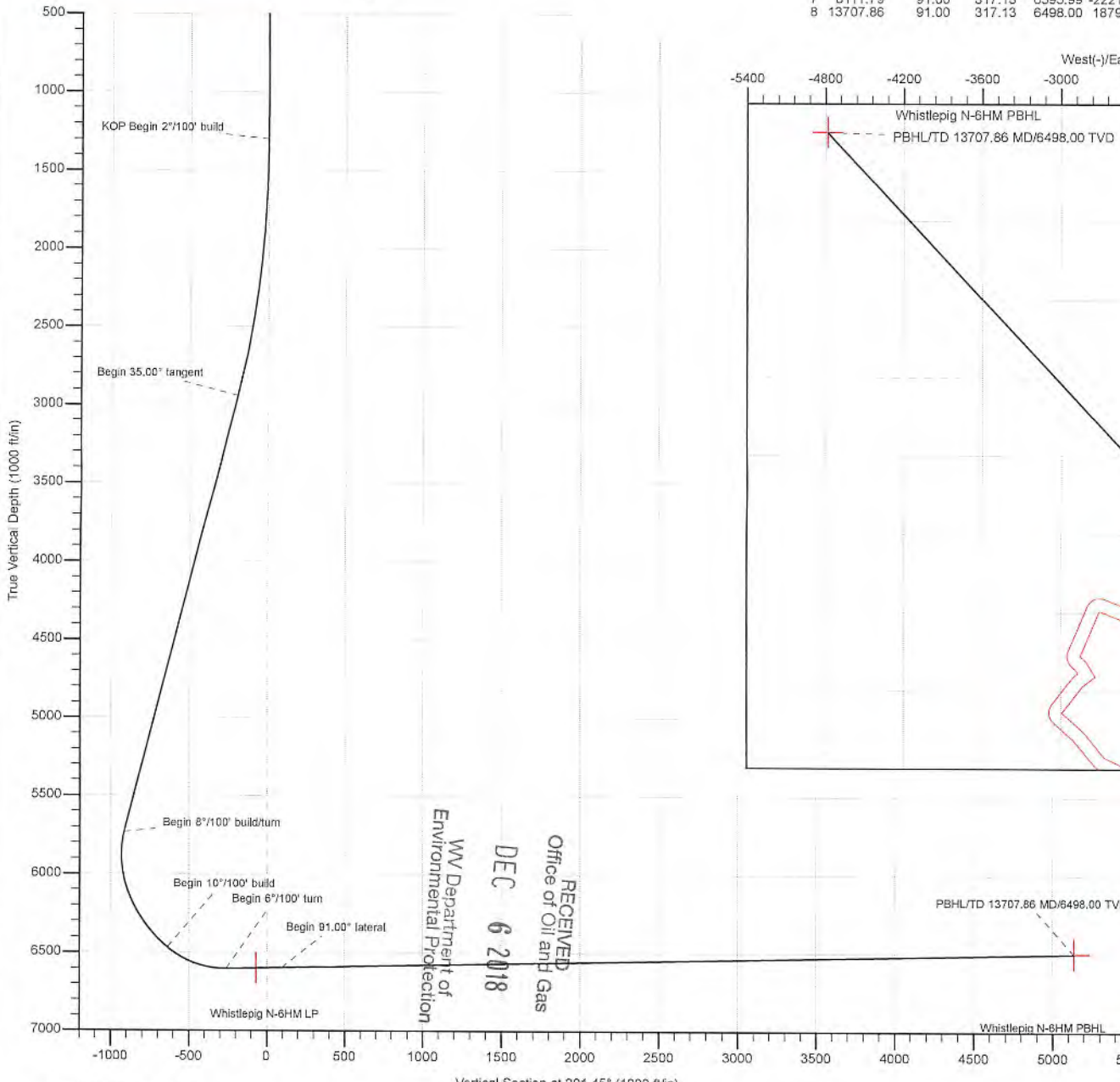
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Well: Whistlepig N-06HM (slot A)
 Site: Whistlepig
 Project: Marshall County, West Virginia
 Design: rev1
 Rig:

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1300.00	0.00	0.00	1300.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
3	3050.00	35.00	179.75	2943.18	-518.09	2.26	2.00	179.75	-191.58	Begin 35.00° tangent
4	6465.75	35.00	179.75	5733.00	-2471.52	10.78	0.00	0.00	-913.93	Begin 8°/100' build/turn
5	7332.96	50.00	295.00	6468.56	-2597.22	-337.27	8.00	132.57	-635.96	Begin 10°/100' build
6	7742.96	91.00	295.00	6602.52	-2437.35	-680.12	10.00	0.00	-258.39	Begin 6°/100' turn
7	8111.79	91.00	317.13	6595.99	-2221.59	-976.36	6.00	89.80	96.24	Begin 91.00° lateral
8	13707.86	91.00	317.13	6498.00	1879.36	-4782.75	0.00	0.00	5138.74	PBHL/TD 13707.86 MD/6498.00 TVD

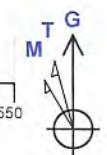


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Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1990
 Zone: Zone 17N (84 W to 78 W)

System Datum: Mean Sea Level
 Depth Reference: GL @ 1367.00ft
 Northing: 14444965.96
 Easting: 1698572.65
 Latitude: 39.77526165
 Longitude: -80.79301490

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.00°



Azimuths to Grid North
 True North: -0.13°
 Magnetic North: -8.80°

Magnetic Field
 Strength: 52017.85nT
 Dip Angle: 66.84°
 Date: 11/1/2018
 Model: IGRF2015





Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Whistlepig N-06HM (slot A)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1367.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1367.00ft
Site:	Whistlepig	North Reference:	Grid
Well:	Whistlepig N-06HM (slot A)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Project	Marshall County, West Virginia		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Whistlepig				
Site Position:		Northing:	14,444,965.96 usft	Latitude:	39.77526165
From:	Lat/Long	Easting:	1,698,572.65 usft	Longitude:	-80.79301490
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.13 °

Well	Whistlepig N-06HM (slot A)					
Well Position	+N/-S	0.00 ft	Northing:	14,444,965.96 usft	Latitude:	39.77526165
	+E/-W	0.00 ft	Easting:	1,698,572.65 usft	Longitude:	-80.79301490
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	1,367.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/1/2018	-8.67	66.84	52,017.80245798

Design	rev1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	291.45

Plan Survey Tool Program	Date	11/6/2018		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	13,707.86 rev1 (Original Hole)	MWD	MWD - Standard

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Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,050.00	35.00	179.75	2,943.18	-518.09	2.26	2.00	2.00	0.00	179.75	
6,455.75	35.00	179.75	5,733.00	-2,471.52	10.78	0.00	0.00	0.00	0.00	
7,332.96	50.00	295.00	6,468.56	-2,597.22	-337.27	8.00	1.71	13.14	132.57	
7,742.96	91.00	295.00	6,602.52	-2,437.35	-680.12	10.00	10.00	0.00	0.00	
8,111.79	91.00	317.13	6,595.99	-2,221.59	-976.36	6.00	0.00	6.00	89.80	
13,707.86	91.00	317.13	6,498.00	1,879.36	-4,782.75	0.00	0.00	0.00	0.00	Whistlepig N-6HM PB



Planning Report - Geographic

Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Whistlepig
 Well: Whistlepig N-06HM (slot A)
 Wellbore: Original Hole
 Design: rev1

Local Co-ordinate Reference: Well Whistlepig N-06HM (slot A)
 TVD Reference: GL @ 1367.00ft
 MD Reference: GL @ 1367.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
100.00	0.00	0.00	100.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
200.00	0.00	0.00	200.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
300.00	0.00	0.00	300.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
400.00	0.00	0.00	400.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
500.00	0.00	0.00	500.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
600.00	0.00	0.00	600.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
700.00	0.00	0.00	700.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
800.00	0.00	0.00	800.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
900.00	0.00	0.00	900.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490
KOP Begin 2°/100' build									
1,400.00	2.00	179.75	1,399.98	-1.75	0.01	14,444,964.22	1,698,572.65	39.77525686	-80.79301489
1,500.00	4.00	179.75	1,499.84	-6.98	0.03	14,444,958.98	1,698,572.68	39.77524249	-80.79301485
1,600.00	6.00	179.75	1,599.45	-15.69	0.07	14,444,950.27	1,698,572.71	39.77521855	-80.79301479
1,700.00	8.00	179.75	1,698.70	-27.88	0.12	14,444,938.08	1,698,572.77	39.77518509	-80.79301470
1,800.00	10.00	179.75	1,797.47	-43.52	0.19	14,444,922.44	1,698,572.84	39.77514213	-80.79301458
1,900.00	12.00	179.75	1,895.62	-62.60	0.27	14,444,903.36	1,698,572.92	39.77508973	-80.79301444
2,000.00	14.00	179.75	1,993.06	-85.10	0.37	14,444,880.86	1,698,573.02	39.77502795	-80.79301428
2,100.00	16.00	179.75	2,089.64	-110.98	0.48	14,444,854.98	1,698,573.13	39.77495688	-80.79301409
2,200.00	18.00	179.75	2,185.27	-140.21	0.61	14,444,825.75	1,698,573.26	39.77487659	-80.79301388
2,300.00	20.00	179.75	2,279.82	-172.77	0.75	14,444,793.19	1,698,573.40	39.77478718	-80.79301364
2,400.00	22.00	179.75	2,373.17	-208.60	0.91	14,444,757.36	1,698,573.56	39.77468877	-80.79301338
2,500.00	24.00	179.75	2,465.21	-247.67	1.08	14,444,718.29	1,698,573.73	39.77458147	-80.79301309
2,600.00	26.00	179.75	2,555.84	-289.93	1.27	14,444,676.03	1,698,573.91	39.77446541	-80.79301278
2,700.00	28.00	179.75	2,644.94	-335.33	1.46	14,444,630.63	1,698,574.11	39.77434074	-80.79301245
2,800.00	30.00	179.75	2,732.39	-383.81	1.67	14,444,582.16	1,698,574.32	39.77420761	-80.79301210
2,900.00	32.00	179.75	2,818.11	-435.31	1.90	14,444,530.66	1,698,574.55	39.77406617	-80.79301172
3,000.00	34.00	179.75	2,901.97	-489.77	2.14	14,444,476.19	1,698,574.78	39.77391660	-80.79301132
3,050.00	35.00	179.75	2,943.18	-518.09	2.26	14,444,447.87	1,698,574.91	39.77383883	-80.79301112
Begin 35.00° tangent									
3,100.00	35.00	179.75	2,984.13	-546.76	2.39	14,444,419.20	1,698,575.03	39.77376007	-80.79301091
3,200.00	35.00	179.75	3,066.05	-604.12	2.64	14,444,361.84	1,698,575.28	39.77360255	-80.79301049
3,300.00	35.00	179.75	3,147.96	-661.48	2.89	14,444,304.48	1,698,575.53	39.77344503	-80.79301007
3,400.00	35.00	179.75	3,229.88	-718.84	3.14	14,444,247.13	1,698,575.78	39.77328751	-80.79300965
3,500.00	35.00	179.75	3,311.79	-776.19	3.39	14,444,189.77	1,698,576.03	39.77312999	-80.79300923
3,600.00	35.00	179.75	3,393.71	-833.55	3.64	14,444,132.41	1,698,576.28	39.77297247	-80.79300881
3,700.00	35.00	179.75	3,475.62	-890.91	3.89	14,444,075.05	1,698,576.53	39.77281495	-80.79300839
3,800.00	35.00	179.75	3,557.54	-948.26	4.14	14,444,017.70	1,698,576.78	39.77265743	-80.79300798
3,900.00	35.00	179.75	3,639.45	-1,005.62	4.39	14,443,960.34	1,698,577.03	39.77249991	-80.79300756
4,000.00	35.00	179.75	3,721.37	-1,062.98	4.64	14,443,902.98	1,698,577.28	39.77234239	-80.79300714
4,100.00	35.00	179.75	3,803.29	-1,120.34	4.89	14,443,845.63	1,698,577.53	39.77218487	-80.79300672
4,200.00	35.00	179.75	3,885.20	-1,177.69	5.14	14,443,788.27	1,698,577.78	39.77202735	-80.79300630
4,300.00	35.00	179.75	3,967.12	-1,235.05	5.39	14,443,730.91	1,698,578.04	39.77186983	-80.79300588
4,400.00	35.00	179.75	4,049.03	-1,292.41	5.64	14,443,673.56	1,698,578.29	39.77171231	-80.79300546
4,500.00	35.00	179.75	4,130.95	-1,349.76	5.89	14,443,616.20	1,698,578.54	39.77155479	-80.79300504
4,600.00	35.00	179.75	4,212.86	-1,407.12	6.14	14,443,558.84	1,698,578.79	39.77139727	-80.79300462
4,700.00	35.00	179.75	4,294.78	-1,464.48	6.39	14,443,501.48	1,698,579.04	39.77123975	-80.79300421
4,800.00	35.00	179.75	4,376.69	-1,521.84	6.64	14,443,444.13	1,698,579.29	39.77108223	-80.79300379
4,900.00	35.00	179.75	4,458.61	-1,579.19	6.89	14,443,386.77	1,698,579.54	39.77092471	-80.79300337
5,000.00	35.00	179.75	4,540.52	-1,636.55	7.14	14,443,329.41	1,698,579.79	39.77076719	-80.79300295



Planning Report - Geographic

Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Whistlepig
 Well: Whistlepig N-06HM (slot A)
 Wellbore: Original Hole
 Design: rev1

Local Co-ordinate Reference: Well Whistlepig N-06HM (slot A)
 TVD Reference: GL @ 1367.00ft
 MD Reference: GL @ 1367.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,100.00	35.00	179.75	4,622.44	-1,693.91	7.39	14,443,272.06	1,698,580.04	39.77060967	-80.79300253
5,200.00	35.00	179.75	4,704.35	-1,751.26	7.64	14,443,214.70	1,698,580.29	39.77045215	-80.79300211
5,300.00	35.00	179.75	4,786.27	-1,808.62	7.89	14,443,157.34	1,698,580.54	39.77029463	-80.79300169
5,400.00	35.00	179.75	4,868.18	-1,865.98	8.14	14,443,099.99	1,698,580.79	39.77013711	-80.79300127
5,500.00	35.00	179.75	4,950.10	-1,923.34	8.39	14,443,042.63	1,698,581.04	39.76997959	-80.79300085
5,600.00	35.00	179.75	5,032.01	-1,980.69	8.64	14,442,985.27	1,698,581.29	39.76982207	-80.79300043
5,700.00	35.00	179.75	5,113.93	-2,038.05	8.89	14,442,927.91	1,698,581.54	39.76966454	-80.79300002
5,800.00	35.00	179.75	5,195.84	-2,095.41	9.14	14,442,870.56	1,698,581.79	39.76950702	-80.79299960
5,900.00	35.00	179.75	5,277.76	-2,152.76	9.39	14,442,813.20	1,698,582.04	39.76934950	-80.79299918
6,000.00	35.00	179.75	5,359.67	-2,210.12	9.64	14,442,755.84	1,698,582.29	39.76919198	-80.79299876
6,100.00	35.00	179.75	5,441.59	-2,267.48	9.89	14,442,698.49	1,698,582.54	39.76903446	-80.79299834
6,200.00	35.00	179.75	5,523.50	-2,324.83	10.14	14,442,641.13	1,698,582.79	39.76887694	-80.79299792
6,300.00	35.00	179.75	5,605.42	-2,382.19	10.39	14,442,583.77	1,698,583.04	39.76871942	-80.79299750
6,400.00	35.00	179.75	5,687.33	-2,439.55	10.64	14,442,526.42	1,698,583.29	39.76856190	-80.79299708
6,455.75	35.00	179.75	5,733.00	-2,471.52	10.78	14,442,494.44	1,698,583.43	39.76847409	-80.79299685
Begin 8°/100' build/turn									
6,500.00	32.70	184.58	5,769.76	-2,496.14	9.88	14,442,469.83	1,698,582.53	39.76840650	-80.79300025
6,600.00	28.33	197.84	5,855.99	-2,545.73	0.44	14,442,420.24	1,698,573.09	39.76827037	-80.79303426
6,700.00	25.61	214.49	5,945.23	-2,586.20	-19.09	14,442,379.77	1,698,553.55	39.76815936	-80.79310412
6,800.00	25.08	233.21	6,035.75	-2,616.75	-48.35	14,442,349.21	1,698,524.29	39.76807562	-80.79320850
6,900.00	26.86	251.08	6,125.79	-2,636.80	-86.76	14,442,329.16	1,698,485.89	39.76802080	-80.79334534
7,000.00	30.56	265.91	6,213.59	-2,645.96	-133.57	14,442,320.01	1,698,439.08	39.76799596	-80.79351200
7,100.00	35.58	277.37	6,297.44	-2,644.04	-187.87	14,442,321.93	1,698,384.78	39.76800158	-80.79370522
7,200.00	41.44	286.15	6,375.72	-2,631.08	-248.60	14,442,334.88	1,698,324.04	39.76803755	-80.79392125
7,300.00	47.82	293.04	6,446.89	-2,607.34	-314.59	14,442,358.63	1,698,258.06	39.76810317	-80.79415588
7,332.96	50.00	295.00	6,468.56	-2,597.22	-337.27	14,442,368.74	1,698,235.38	39.76813109	-80.79423652
Begin 10°/100' build									
7,400.00	56.70	295.00	6,508.55	-2,574.50	-385.99	14,442,391.46	1,698,186.66	39.76819379	-80.79440972
7,500.00	66.70	295.00	6,555.89	-2,537.34	-465.69	14,442,428.63	1,698,106.96	39.76829636	-80.79469305
7,600.00	76.70	295.00	6,587.25	-2,497.26	-551.63	14,442,468.70	1,698,021.02	39.76840695	-80.79499856
7,700.00	86.70	295.00	6,601.66	-2,455.50	-641.20	14,442,510.47	1,697,931.45	39.76852222	-80.79531697
7,742.96	91.00	295.00	6,602.52	-2,437.35	-680.12	14,442,528.62	1,697,892.53	39.76857230	-80.79545533
Begin 6°/100' turn									
7,800.00	91.01	298.42	6,601.52	-2,411.72	-731.05	14,442,554.25	1,697,841.59	39.76864301	-80.79563639
7,900.00	91.02	304.42	6,599.74	-2,359.61	-816.34	14,442,606.35	1,697,756.31	39.76878664	-80.79593946
8,000.00	91.02	310.42	6,597.96	-2,298.88	-895.70	14,442,667.08	1,697,676.94	39.76895393	-80.79622142
8,100.00	91.01	316.43	6,596.20	-2,230.18	-968.29	14,442,735.78	1,697,604.36	39.76914304	-80.79647917
8,111.79	91.00	317.13	6,595.99	-2,221.59	-976.36	14,442,744.38	1,697,596.29	39.76916669	-80.79650784
Begin 91.00° lateral									
8,200.00	91.00	317.13	6,594.44	-2,156.95	-1,036.36	14,442,809.01	1,697,536.29	39.76934459	-80.79672084
8,300.00	91.00	317.13	6,592.69	-2,083.67	-1,104.38	14,442,882.30	1,697,468.27	39.76954627	-80.79696231
8,400.00	91.00	317.13	6,590.94	-2,010.38	-1,172.40	14,442,955.58	1,697,400.25	39.76974794	-80.79720379
8,500.00	91.00	317.13	6,589.19	-1,937.10	-1,240.42	14,443,028.86	1,697,332.23	39.76994962	-80.79744527
8,600.00	91.00	317.13	6,587.44	-1,863.82	-1,308.43	14,443,102.14	1,697,264.21	39.77015130	-80.79768674
8,700.00	91.00	317.13	6,585.69	-1,790.54	-1,376.45	14,443,175.43	1,697,196.20	39.77035297	-80.79792823
8,800.00	91.00	317.13	6,583.94	-1,717.25	-1,444.47	14,443,248.71	1,697,128.18	39.77055465	-80.79816971
8,900.00	91.00	317.13	6,582.19	-1,643.97	-1,512.49	14,443,321.99	1,697,060.16	39.77075632	-80.79841119
9,000.00	91.00	317.13	6,580.44	-1,570.69	-1,580.51	14,443,395.28	1,696,992.14	39.77095800	-80.79865268
9,100.00	91.00	317.13	6,578.69	-1,497.41	-1,648.53	14,443,468.56	1,696,924.12	39.77115967	-80.79889416
9,200.00	91.00	317.13	6,576.93	-1,424.12	-1,716.55	14,443,541.84	1,696,856.10	39.77136135	-80.79913565
9,300.00	91.00	317.13	6,575.18	-1,350.84	-1,784.57	14,443,615.12	1,696,788.08	39.77156302	-80.79937714
9,400.00	91.00	317.13	6,573.43	-1,277.56	-1,852.59	14,443,688.41	1,696,720.06	39.77176469	-80.79961863
9,500.00	91.00	317.13	6,571.68	-1,204.27	-1,920.61	14,443,761.69	1,696,652.04	39.77196637	-80.79986012
9,600.00	91.00	317.13	6,569.93	-1,130.99	-1,988.62	14,443,834.97	1,696,584.03	39.77216804	-80.80010162



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Whistlepig N-06HM (slot A)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1367.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1367.00ft
Site:	Whistlepig	North Reference:	Grid
Well:	Whistlepig N-06HM (slot A)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,700.00	91.00	317.13	6,568.18	-1,057.71	-2,056.64	14,443,908.25	1,696,516.01	39.77236971	-80.80034311
9,800.00	91.00	317.13	6,566.43	-984.43	-2,124.66	14,443,981.54	1,696,447.99	39.77257138	-80.80058461
9,900.00	91.00	317.13	6,564.68	-911.14	-2,192.68	14,444,054.82	1,696,379.97	39.77277305	-80.80082610
10,000.00	91.00	317.13	6,562.93	-837.86	-2,260.70	14,444,128.10	1,696,311.95	39.77297472	-80.80106760
10,100.00	91.00	317.13	6,561.17	-764.58	-2,328.72	14,444,201.38	1,696,243.93	39.77317639	-80.80130910
10,200.00	91.00	317.13	6,559.42	-691.30	-2,396.74	14,444,274.67	1,696,175.91	39.77337806	-80.80155061
10,300.00	91.00	317.13	6,557.67	-618.01	-2,464.76	14,444,347.95	1,696,107.89	39.77357973	-80.80179211
10,400.00	91.00	317.13	6,555.92	-544.73	-2,532.78	14,444,421.23	1,696,039.87	39.77378139	-80.80203361
10,500.00	91.00	317.13	6,554.17	-471.45	-2,600.80	14,444,494.51	1,695,971.86	39.77398306	-80.80227512
10,600.00	91.00	317.13	6,552.42	-398.17	-2,668.81	14,444,567.80	1,695,903.84	39.77418473	-80.80251663
10,700.00	91.00	317.13	6,550.67	-324.88	-2,736.83	14,444,641.08	1,695,835.82	39.77438640	-80.80275814
10,800.00	91.00	317.13	6,548.92	-251.60	-2,804.85	14,444,714.36	1,695,767.80	39.77458806	-80.80299965
10,900.00	91.00	317.13	6,547.17	-178.32	-2,872.87	14,444,787.64	1,695,699.78	39.77478973	-80.80324116
11,000.00	91.00	317.13	6,545.42	-105.04	-2,940.89	14,444,860.93	1,695,631.76	39.77499139	-80.80348267
11,100.00	91.00	317.13	6,543.66	-31.75	-3,008.91	14,444,934.21	1,695,563.74	39.77519306	-80.80372419
11,200.00	91.00	317.13	6,541.91	41.53	-3,076.93	14,445,007.49	1,695,495.72	39.77539472	-80.80396570
11,300.00	91.00	317.13	6,540.16	114.81	-3,144.95	14,445,080.77	1,695,427.71	39.77559638	-80.80420722
11,400.00	91.00	317.13	6,538.41	188.10	-3,212.97	14,445,154.06	1,695,359.69	39.77579805	-80.80444874
11,500.00	91.00	317.13	6,536.66	261.38	-3,280.99	14,445,227.34	1,695,291.67	39.77599971	-80.80469026
11,600.00	91.00	317.13	6,534.91	334.66	-3,349.00	14,445,300.62	1,695,223.65	39.77620137	-80.80493178
11,700.00	91.00	317.13	6,533.16	407.94	-3,417.02	14,445,373.90	1,695,155.63	39.77640303	-80.80517330
11,800.00	91.00	317.13	6,531.41	481.23	-3,485.04	14,445,447.19	1,695,087.61	39.77660469	-80.80541483
11,900.00	91.00	317.13	6,529.66	554.51	-3,553.06	14,445,520.47	1,695,019.59	39.77680635	-80.80565635
12,000.00	91.00	317.13	6,527.91	627.79	-3,621.08	14,445,593.75	1,694,951.57	39.77700801	-80.80589788
12,100.00	91.00	317.13	6,526.15	701.07	-3,689.10	14,445,667.03	1,694,883.55	39.77720967	-80.80613941
12,200.00	91.00	317.13	6,524.40	774.36	-3,757.12	14,445,740.32	1,694,815.54	39.77741133	-80.80638094
12,300.00	91.00	317.13	6,522.65	847.64	-3,825.14	14,445,813.60	1,694,747.52	39.77761299	-80.80662247
12,400.00	91.00	317.13	6,520.90	920.92	-3,893.16	14,445,886.88	1,694,679.50	39.77781464	-80.80686400
12,500.00	91.00	317.13	6,519.15	994.20	-3,961.18	14,445,960.16	1,694,611.48	39.77801630	-80.80710554
12,600.00	91.00	317.13	6,517.40	1,067.49	-4,029.19	14,446,033.45	1,694,543.46	39.77821796	-80.80734707
12,700.00	91.00	317.13	6,515.65	1,140.77	-4,097.21	14,446,106.73	1,694,475.44	39.77841961	-80.80758861
12,800.00	91.00	317.13	6,513.90	1,214.05	-4,165.23	14,446,180.01	1,694,407.42	39.77862127	-80.80783015
12,900.00	91.00	317.13	6,512.15	1,287.34	-4,233.25	14,446,253.29	1,694,339.40	39.77882293	-80.80807169
13,000.00	91.00	317.13	6,510.40	1,360.62	-4,301.27	14,446,326.58	1,694,271.38	39.77902458	-80.80831323
13,100.00	91.00	317.13	6,508.64	1,433.90	-4,369.29	14,446,399.86	1,694,203.37	39.77922623	-80.80855477
13,200.00	91.00	317.13	6,506.89	1,507.18	-4,437.31	14,446,473.14	1,694,135.35	39.77942789	-80.80879632
13,300.00	91.00	317.13	6,505.14	1,580.47	-4,505.33	14,446,546.42	1,694,067.33	39.77962954	-80.80903786
13,400.00	91.00	317.13	6,503.39	1,653.75	-4,573.35	14,446,619.71	1,693,999.31	39.77983119	-80.80927941
13,500.00	91.00	317.13	6,501.64	1,727.03	-4,641.37	14,446,692.99	1,693,931.29	39.78003285	-80.80952096
13,600.00	91.00	317.13	6,499.89	1,800.31	-4,709.38	14,446,766.27	1,693,863.27	39.78023450	-80.80976251
13,700.00	91.00	317.13	6,498.14	1,873.60	-4,777.40	14,446,839.55	1,693,795.25	39.78043615	-80.81000406
13,707.86	91.00	317.13	6,498.00	1,879.36	-4,782.75	14,446,845.31	1,693,789.90	39.78045200	-80.81002305

PBHLTD 13707.86 MD/6498.00 TVD



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Whistlepig N-06HM (slot A)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 1367.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 1367.00ft
Site:	Whistlepig	North Reference:	Grid
Well:	Whistlepig N-06HM (slot A)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
Whistlepig N-6HM PBHL	0.00	0.00	6,498.00	1,879.36	-4,782.75	14,446,845.31	1,693,789.90	39.78045200	-80.81002305
- plan hits target center									
- Point									
Whistlepig N-6HM LP	0.00	0.00	6,599.00	-2,354.90	-852.30	14,442,611.07	1,697,720.35	39.76879982	-80.79606741
- plan misses target center by 16.98ft at 7931.45ft MD (6599.18 TVD, -2341.41 N, -841.98 E)									
- Point									

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)		
1,300.00	1,300.00	0.00	0.00	KOP Begin 2°/100' build	
3,050.00	2,943.18	-518.09	2.26	Begin 35.00° tangent	
6,455.75	5,733.00	-2,471.52	10.78	Begin 8°/100' build/turn	
7,332.96	6,468.56	-2,597.22	-337.27	Begin 10°/100' build	
7,742.96	6,602.52	-2,437.35	-680.12	Begin 6°/100' turn	
8,111.79	6,595.99	-2,221.59	-976.36	Begin 91.00° lateral	
13,707.86	6,498.00	1,879.36	-4,782.75	PBHL/TD 13707.86 MD/6498.00 TVD	

WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Whistlepig N-6HM

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

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FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

WV Department of
Environmental Protection

Watershed (HUC 10) Haynes Run - Ohio River Quadrangle Powhatan Point 7.5'

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes No

Will a pit be used? Yes No

If so, please describe anticipated pit waste: AST Tanks with proper containment will be used for staging fresh water for frac and flow back water

Will a synthetic liner be used in the pit? Yes No If so, what ml.? AST Tanks will be used with proper contain

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number UIC 2459, UIC 965, UIC 359, UIC 2D0732540, UIC 2D0732523)
- Reuse (at API Number _____)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain _____)

Will closed loop system be used? If so, describe: Yes - For Vertical and Horizontal Drilling

Drilling medium anticipated for this well (vertical and horizontal)? Air, freshwater, oil based, etc. Air for vertical / Oil for Horizontal

-If oil based, what type? Synthetic, petroleum, etc. Synthetic Oil Base

Additives to be used in drilling medium? Barite for weight

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. All drill cuttings to be disposed of in a Landfill

-If left in pit and plan to solidify what medium will be used? (cement, lime, sawdust) N/A

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0109185) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1386426)

Permittee shall provide written notice to the Office of Oil and Gas of any load of drill cuttings or associated waste rejected at any West Virginia solid waste facility. The notice shall be provided within 24 hours of rejection and the permittee shall also disclose where it was properly disposed.

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature James A Pancake

Company Official (Typed Name) James Pancake

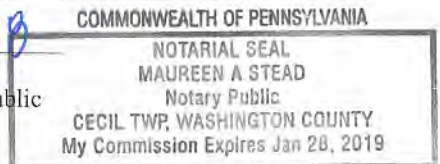
Company Official Title Vice President - Geoscience

Subscribed and sworn before me this 28 day of NOVEMBER, 20 18

Maureen A Stead

Notary Public

My commission expires 1/28/19



Form WW-9

Operator's Well No. Whistlepig N-6HM

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 21.74 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Ryegrass	40	Orchard Grass	12
Spring Oats	96	Ladino	3
		White Clover	2

Attach:

Maps(s) of road, location, pit and proposed area for land application (unless engineered plans including this info have been provided). If water from the pit will be land applied, include dimensions (L x W x D) of the pit, and dimensions (L x W), and area in acreage, of the land application area.

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: *Juan Mendez*

Comments: _____

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Office of Oil and Gas

DEC 6 2018

WV Department of
Environmental Protection

Title: Oil & Gas Inspector

Date: 11/29/18

Field Reviewed? Yes No

WW-9

SHEET 1

PROPOSED WHISTLEPIG N-6HM

SUPPLEMENT PG 1

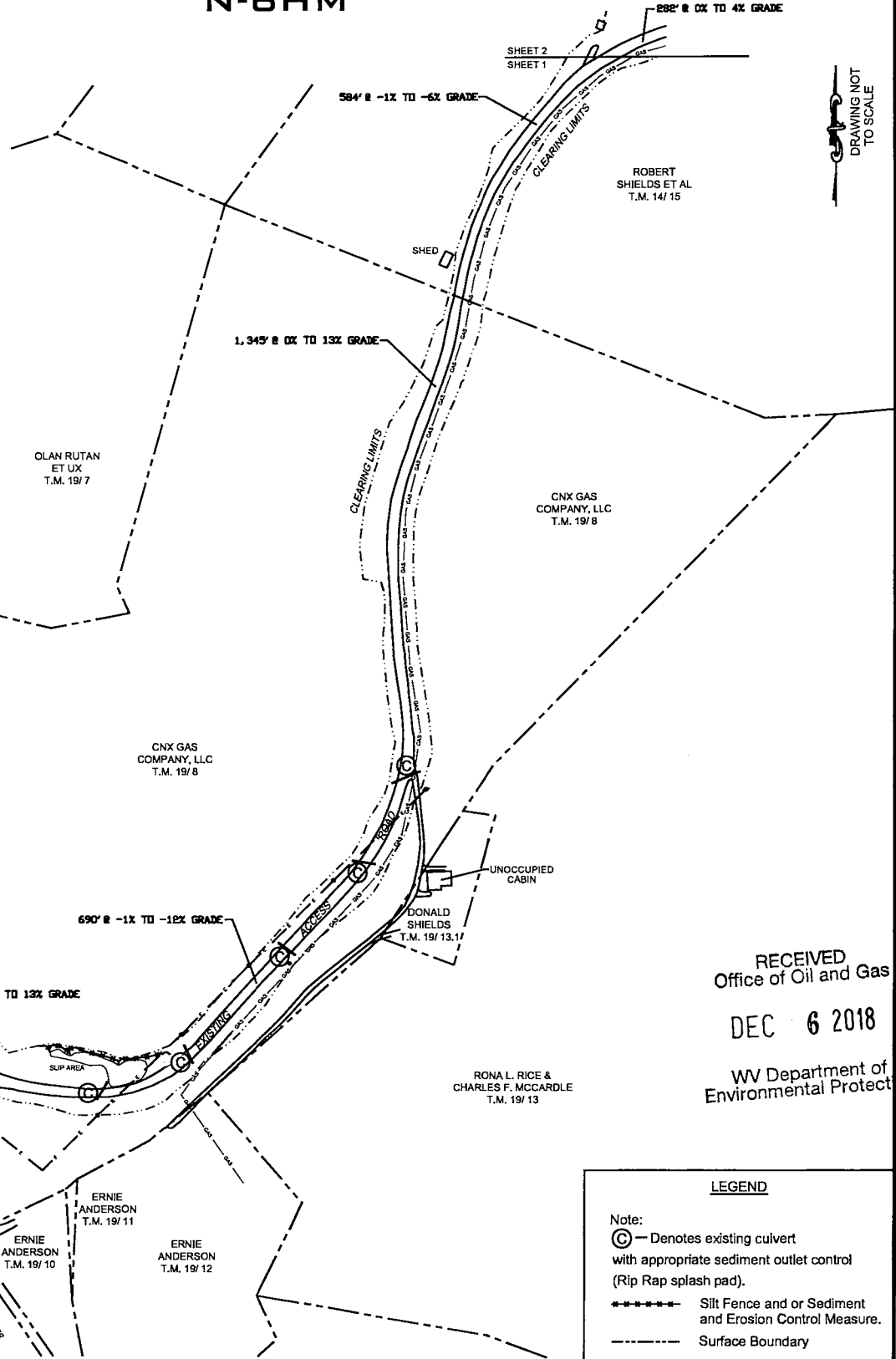
REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.

INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.

ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED. TEMPORARILY SEED AND MULCH ALL SLOPES UPON CONSTRUCTION OF LOCATION.

ALL CUT AND FILL SLOPES ARE 2H : 1V SLOPE.

ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.



DRAWING NOT TO SCALE

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Office of Oil and Gas
DEC 6 2018
WV Department of
Environmental Protection

LEGEND

Note:
 (C) — Denotes existing culvert with appropriate sediment outlet control (Rip Rap splash pad).
 ***** Silt Fence and or Sediment and Erosion Control Measure.
 - - - - - Surface Boundary

WW-9

SHEET 2

PROPOSED WHISTLEPIG N-6HM

SUPPLEMENT PG 1

REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.

INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.

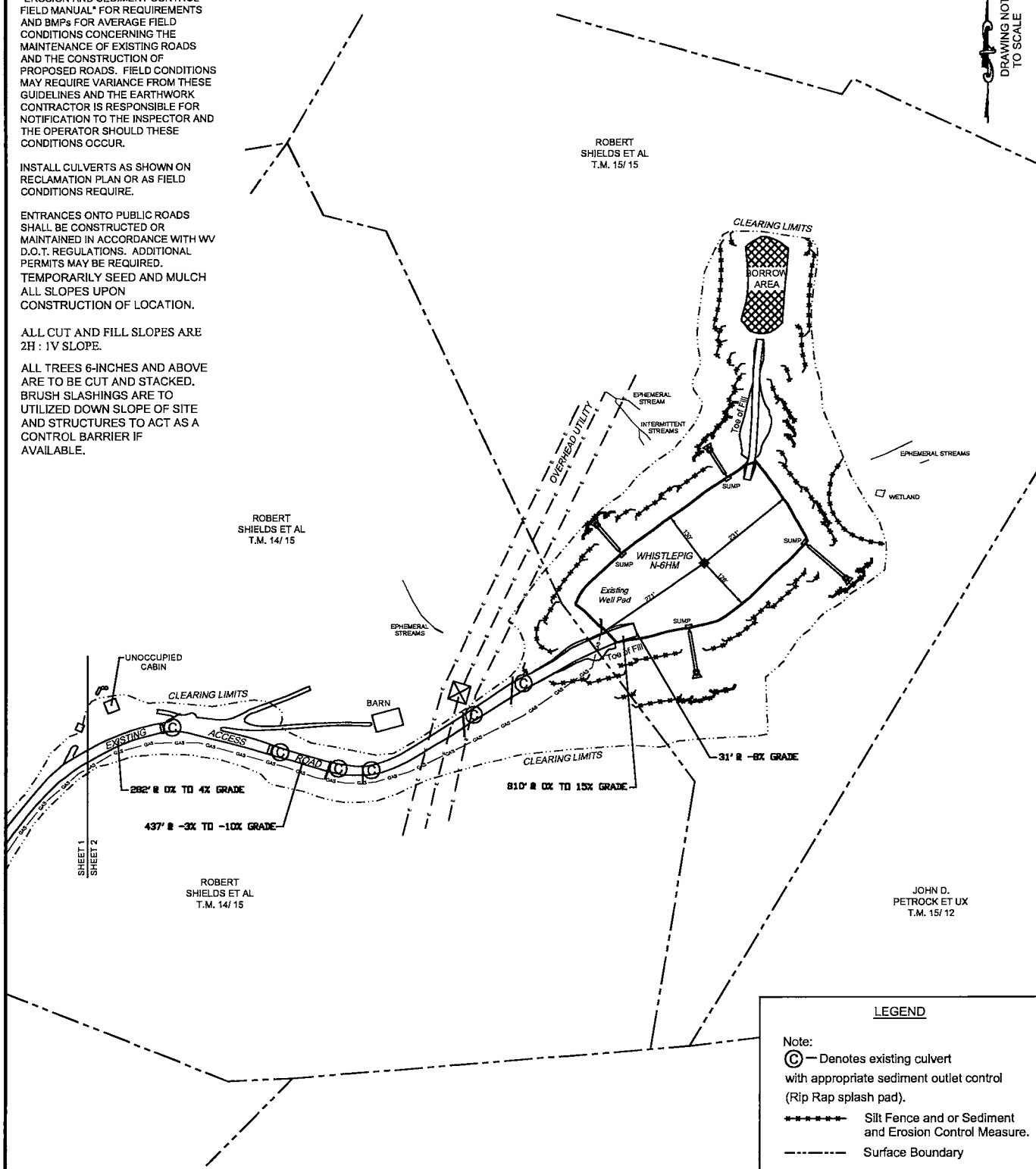
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DRAWING NOT TO SCALE



LEGEND

- Note:
- Ⓢ — Denotes existing culvert with appropriate sediment outlet control (Rip Rap splash pad).
 - ***** — Silt Fence and or Sediment and Erosion Control Measure.
 - — Surface Boundary

DATE: 11-28-2018

PROJECT NO: 494510851

DRAWN BY: J.A.H.



Well Site Safety Plan

Tug Hill Operating, LLC

ju
11/29/18

Well Name: Whistlepig N-6HM

Pad Location: Hoyt Pad

Marshall County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,402,834.43

Easting: 517,725.98

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Office of Oil and Gas

DEC - 6 2018

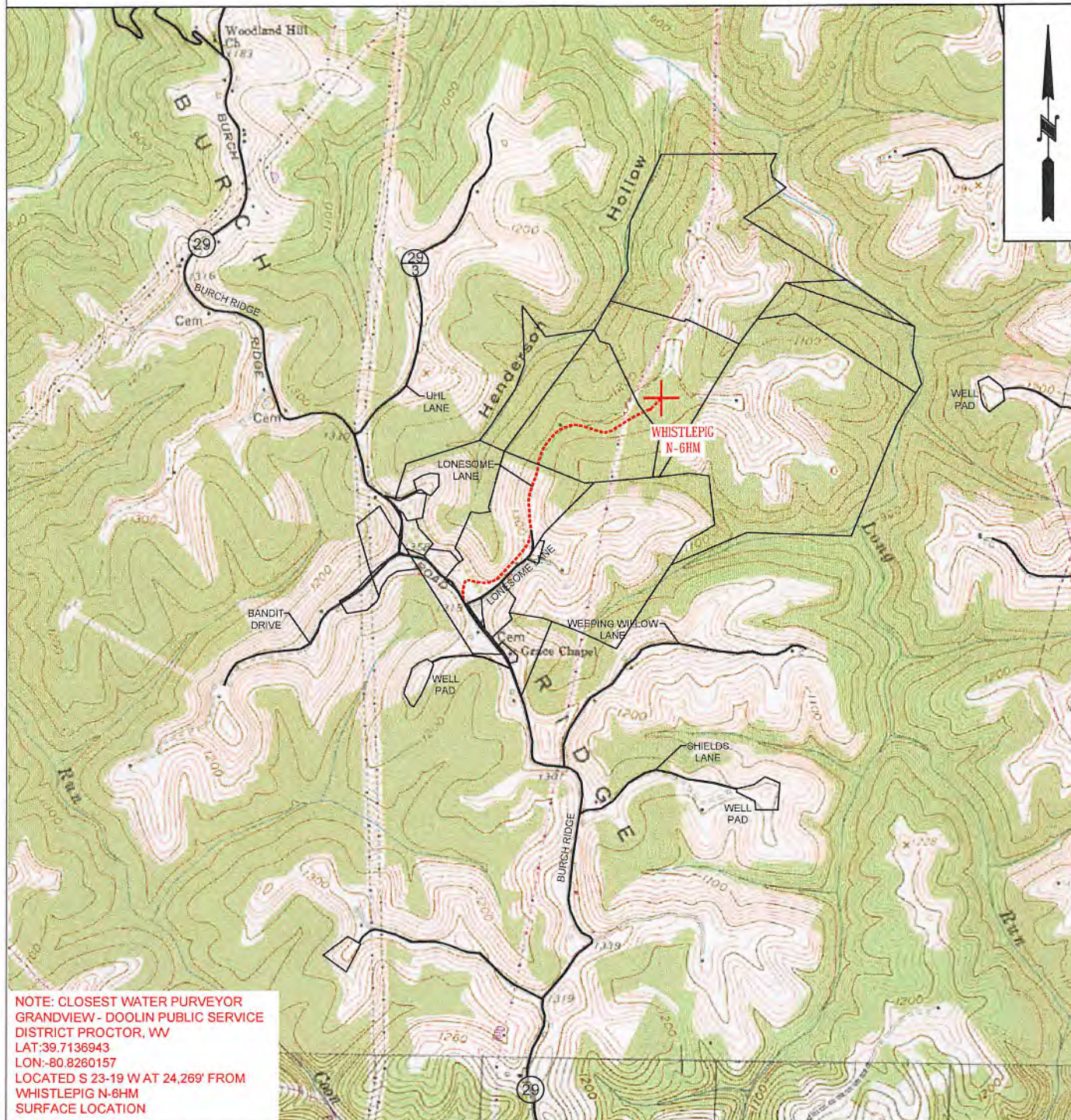
WV Department of
Environmental Protection

November 2018


WW-9

PROPOSED WHISTLEPIG N-6HM

SUPPLEMENT PG 2



NOTE: CLOSEST WATER PURVEYOR
GRANDVIEW - DOOLIN PUBLIC SERVICE
DISTRICT PROCTOR, WV
LAT:39.7136943
LON:-80.8260157
LOCATED S 23-19 W AT 24,269' FROM
WHISTLEPIG N-6HM
SURFACE LOCATION

 TUG HILL OPERATING	OPERATOR	494510851	TOPO SECTION	LEASE NAME
	TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		POWHATAN POINT 7.5'	WHISTLEPIG
			SCALE:	DATE:
			1" = 2000'	DATE: 11-28-2018

WHISTLEPIG LEASE WELL N-6HM 638.1571 ± ACRES

TOP HOLE LATITUDE: 39°47'30"
BOTTOM HOLE LATITUDE: 39°47'30"

DETAIL SKETCH "A"
SCALE 1"=100'

REFERENCES

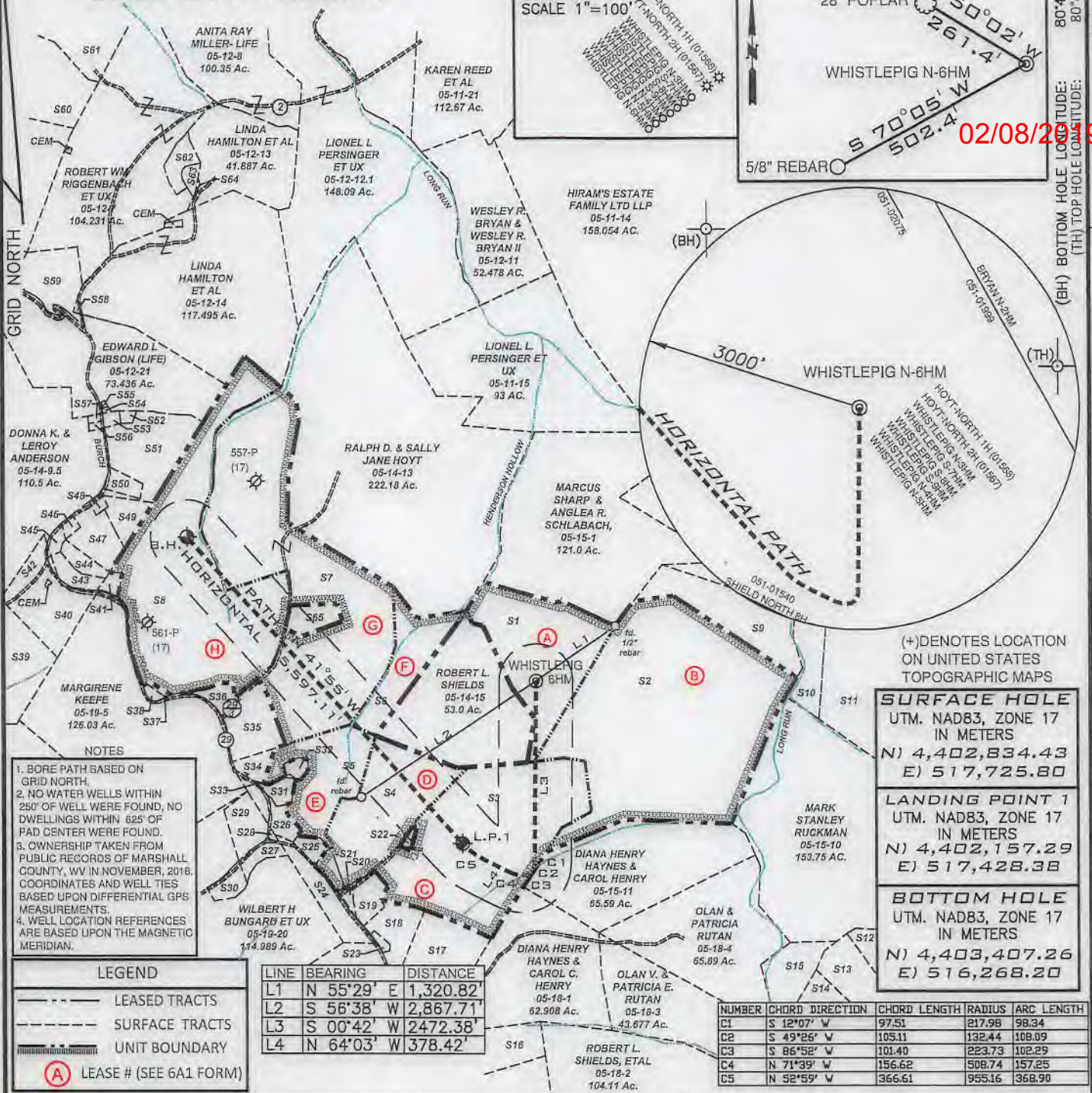
SCALE 1"=300'

28" POPLAR

WHISTLEPIG N-6HM

5/8" REBAR

02/08/2019



NOTES

- BORE PATH BASED ON GRID NORTH.
- NO WATER WELLS WITHIN 250' OF WELL WERE FOUND, NO DWELLINGS WITHIN 625' OF PAD CENTER WERE FOUND.
- OWNERSHIP TAKEN FROM PUBLIC RECORDS OF MARSHALL COUNTY, WV IN NOVEMBER, 2018. COORDINATES AND WELL TIES BASED UPON DIFFERENTIAL GPS MEASUREMENTS.
- WELL LOCATION REFERENCES ARE BASED UPON THE MAGNETIC MERIDIAN.

LEGEND

- LEASED TRACTS
- - - SURFACE TRACTS
- ▬ UNIT BOUNDARY
- (A) LEASE # (SEE 6A1 FORM)

LINE	BEARING	DISTANCE
L1	N 55°29' E	1,320.82'
L2	S 56°38' W	2,867.71'
L3	S 00°42' W	2472.38'
L4	N 64°03' W	378.42'

NUMBER	CHORD DIRECTION	CHORD LENGTH	RADIUS	ARC LENGTH
C1	S 12°07' W	97.51	217.98	98.34
C2	S 49°26' W	105.11	132.44	108.09
C3	S 86°58' W	101.40	223.73	102.29
C4	N 71°39' W	156.62	508.74	157.25
C5	N 52°59' W	366.61	955.16	368.90

(+) DENOTES LOCATION ON UNITED STATES TOPOGRAPHIC MAPS

SURFACE HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,402,834.43
E) 517,725.80

LANDING POINT 1
UTM. NAD83, ZONE 17
IN METERS
N) 4,402,157.29
E) 517,428.38

BOTTOM HOLE
UTM. NAD83, ZONE 17
IN METERS
N) 4,403,407.26
E) 516,268.20

FILE NUMBER _____

DRAWING NUMBER WHISTLEPIG_6HM_REV 1

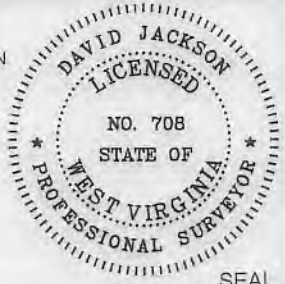
SCALE 1" = 2000'

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

P.S. 708
David L Jackson



JACKSON SURVEYING INC.
P.O. Box 1460
Clarksburg, WV 26302
304-623-6851

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

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

LOCATION ELEVATION 1,367.4' WATERSHED (HUC 10) FISH CREEK

DISTRICT FRANKLIN COUNTY MARSHALL

QUADRANGLE POWHATAN POINT 7.5' LEASE NUMBER SEE WW-6A1 Form

SURFACE OWNER ROBERT L. & REBECCA SHIELDS AND DONALD SHIELDS ACREAGE 49.0

OIL & GAS ROYALTY OWNER ROBERT L. & REBECCA SHIELDS AND DONALD SHIELDS LEASE ACREAGE 49.0

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

TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD: 6,689' TMD: 13,708'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER
CT CORPORATION SYSTEM

ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD
FORT WORTH, TX 76107 CHARLESTON, WV 25313

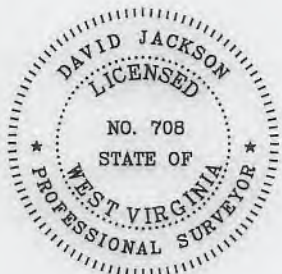
COUNTY NAME
PERMIT

form. ww6

**WHISTLEPIG LEASE
WELL N-6HM
638.1571± ACRES**

02/08/2019

Number	TAX MAP-PARCEL	SURFACE OWNER	ACRES
S1 (A)	05-15-15	Robert L. & Rebecca Shields and Donald Shields	49.0
S2 (B)	05-15-12	John David Petrock, et ux	150.23
S3 (C)	05-19-13	Rona Lee Rice & Charles Franklin McCardle	94.925
S4 (D)	05-19-08	CNX Gas Company, LLC	40.00
S5 (E)	05-19-07	Olan V. Rutan, Et Ux.	32.4801
S6 (F)	05-14-14	Robert L. Shields, et al	29.05
S7 (G)	05-14-12	Dale R. Gallaher, et al	135.100
S8 (H)	05-14-10	Wanda P. Rine (Life)	107.372
S9	05-15-14	John David Petrock, et ux	25.00
S10	05-15-13	CNX Land Resources, Inc.	11.00
S11	05-15-09	CNX Land Resources, Inc.	81.98
S12	05-18-15.4	Edward Lee Burge, Jr	22.34
S13	05-18-15.3	Charles Yeater	26.44
S14	05-18-06	Charles Yeater	26.00
S15	05-18-05	Terry Melott	8.14
S16	05-19-14	James & Sherry Beegle and Ida Rutan	18.356
S17	05-19-30	Ernie & Tammy Anderson	19.037
S18	05-19-29	Ernie & Tammy Anderson	10.961
S19	05-19-12	Ernie L. Anderson, Et Ux	5.33
S20	05-19-10	Ernie L. Anderson, Et Ux	0.8125
S21	05-19-11	Ernie L. Anderson, Et Ux	0.08
S22	05-19-13.1	Donald Shields	0.800
S23	05-19-15	B.J. Herran Revocable Trust	0.72
S24	05-19-09	Penny Elaine Menedez	10.00
S25	05-19-7.5	Adam T. & Jesse L. Robinson	2.640
S26	05-19-7.1	Robert L. Shields, et ux	3.399
S27	05-19-20.1	John J. Ebert (Life)	3.848
S28	P/O 05-19-20	Wilbert H. Bungard, et ux	P/O 114.989
S29	05-19-20.2	Casandra L. Harmon	7.448
S30	05-19-20.3	Sidney Harmon	3.715
S31	05-19-7.2	Olan Rutan	2.783
S32	05-19-7.4	Olan V. Rutan, et ux	1.787
S33	05-19-7.3	Olan V. Rutan, et ux	0.341
S34	05-19-06	Martha M. Rutan	5.1099
S35	05-14-11	Dale R. Gallaher, et al	12.00
S36	05-14-10.4	Adam & Jesse Robinson	3.343
S37	05-14-10.2	Ida Belle Rutan (Life) & Ralph R. Hoyt	0.495
S38	05-14-10.1	Ida Belle Rutan (Life) & Ralph R. Hoyt	0.50
S39	05-14-03	Leroy & Donna K. Anderson	130.00
S40	05-14-08	Lawrence Eugene Anderson	18.29
S41	05-14-10.3	Vernie A. & Jody K. Rine	1.54
S42	05-14-07	Donna K. & Leroy Anderson	4.60
S43	05-14-9.3	Verie A. Rine, et ux	4.118
S44	05-14-9.4	Verie A. Rine, et ux	3.404
S45	05-14-16	George E. Knuth	1.6386
S46	05-14-17	Juntin E & Jody Rine	1.1044
S47	05-14-09	Walter W. Streight, Jr. et ux	9.311
S48	05-14-19	Brian A. & Charlotte Mull	0.92
S49	05-14-9.5	Maria T. Flores	6.024
S50	05-14-9.1	Maria T. Flores	2.882
S51	05-14-9.2	Maria T. Flores	25.0
S52	05-12-17	Joni Lyn Leon	0.752
S53	05-12-18	Joni Lyn Leon	1.018
S54	05-12-16.1	Gary E. Gibson, et al	0.146
S55	05-12-16	Gary E. Gibson, et al	0.104
S56	05-12-19	Joni Lyn Leon	0.457
S57	05-12-20	Joni Lyn Leon	0.457
S58	05-12-15	Woodland Hill Church of God, Trust	0.375
S59	05-12-21.1	Robert W. Jr. & Wendy L. Rigenbach	14.222
S60	05-12-05	CNX Land Resources, Inc.	61.883
S61	05-12-03	CNX Land Resources, Inc.	62.30
S62	05-12-7.2	Raymond K. Miller	4.66
S63	05-12-7.1	Raymond K. Miller	1.609
S64	05-12-13.1	Raymond K. Miller	0.113
S65	05-14-12.1	Henry Wilson Plunkert Jr.	5.00



P.S. 708

David L Jackson



TUG HILL
OPERATING

OPERATOR'S
WELL #: Whistlepig N-6HM
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

WELL PLAT
PAGE 2 OF 2
DATE: 11/28/2018

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
-------------------------	-----------------------	-----------------------	---------	-----------

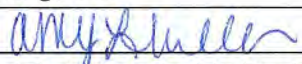
*See attached pages

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Tug Hill Operating, LLC
 By: Amy L. Miller 
 Its: Permitting Specialist - Appalachia Region

Lease No.	Tag	Parcel	Lessor	Lessee	Royalty	Book	Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*14116	A	5-15-15	DONALD SHIELDS	GASTAR EXPLORATION USA, INC	1/8+	669	367	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	26/419 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14117	A	5-15-15	ROBERT L SHIELDS AND REBECCA A SHIELDS	GASTAR EXPLORATION USA, INC	1/8+	669	360	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	26/419 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*19337	B	5-15-12	JACK PETROCK AND HATTIE PETROCK	TRIENERGY, INC.	1/8+	741	68	20/252 TriEnergy, Inc to AB Resources, LLC	21/148 TriEnergy, Inc to TriEnergy Holdings, LLC	24/319 AB Resources, LLC to Chief Exploration & Development LLC and Radler 2000 Limited Partnership	25/1 Chief Exploration & Development LLC, Chief Oil & Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources (USA) Corporation to Chevron USA, Inc	25/105 Chief Exploration & Development LLC, Chief Oil & Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources (USA) Corporation to Chevron USA, Inc	756/397 AB Resources LLC and NPAR, LLC to Chevron USA Inc	28/356 TriEnergy Holdings, LLC and TriEnergy, Inc to Chevron USA Inc	35/470 WPP LLC to KRP Marcellus I LLC, Rivercrest Royalties II LLC, Diversified Rox Minerals LLC, BRD Royalty Holdings LLC and Amon G Carter Foundation	40/57 Chevron USA Inc to TH Exploration II, LLC
10*14110	C	5-19-13	RONA LEE MCCARDLE	GASTAR EXPLORATION USA, INC	1/8+	670	472	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	26/419 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14111	C	5-19-13	HAYHURST COMPANY, A FLORIDA PA	CHESAPEAKE APPALACHIAN, LLC	1/8+	720	236	NA	NA	NA	NA	NA	27/321 Chesapeake Appalachia LLC and Statoil USA Onshore Properties USA, Inc to Gastar Exploration USA, Inc and Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC	
10*14113	C	5-19-13	CHESTNUT HOLDINGS INC	GASTAR EXPLORATION INC	1/8+	827	566	NA	NA	NA	NA	NA	NA	NA	NA	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14571	D	5-19-8	MATTHEW S ANDERSON AND BRENDA ANDERSON	GASTAR EXPLORATION INC	1/8+	840	165	NA	NA	NA	NA	NA	NA	NA	33/308 Gastar Exploration Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14423	E	5-19-7	OLAN V RUTAN AND PATRICIA E	GASTAR EXPLORATION USA, INC	1/8+	727	1	NA	NA	NA	NA	NA	NA	735/263 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14116	F	5-14-14	DONALD SHIELDS	GASTAR EXPLORATION USA, INC	1/8+	669	367	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	26/419 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14117	F	5-14-14	ROBERT L SHIELDS AND REBECCA A SHIELDS	GASTAR EXPLORATION USA, INC	1/8+	669	360	NA	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	26/419 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14928	G	5-14-12	JOSEPH D PARRIOTT AND NELLIE B	TRIENERGY, INC	1/8+	660	517	19/623TriEnergy, Inc to AB Resources, LLC	21/148 TriEnergy, Inc to TriEnergy Holdings, LLC	24/319 AB Resources, LLC to Chief Exploration & Development LLC and Radler 2000 Limited Partnership	25/1 Chief Exploration & Development LLC, Chief Oil & Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources (USA) Corporation to Chevron USA, Inc	25/105 Chief Exploration & Development LLC, Chief Oil & Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources (USA) Corporation to Chevron USA, Inc	756/397 AB Resources LLC and NPAR, LLC to Chevron USA Inc	35/470 WPP LLC to KRP Marcellus I LLC, Rivercrest Royalties II LLC, Diversified Rox Minerals LLC, BRD Royalty Holdings LLC and Amon G Carter Foundation	32/355 Chevron USA Inc to Gastar Exploration Inc and Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC

10*14420	H	5-14-10	ELLIS V. RINE AND WANDA P. RINE	GASTAR EXPLORATION USA, INC	1/8+	725	141	NA	NA	NA	NA	NA	735/263 Gastar Exploration USA Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14116	#N/A	5-14-15	DONALD SHIELDS	GASTAR EXPLORATION USA, INC	1/8+	669	367	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	26/419 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14117	#N/A	5-14-15	ROBERT L SHIELDS AND REBECCA A SHIELDS	GASTAR EXPLORATION USA, INC	1/8+	669	360	NA	NA	NA	NA	23/353 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	26/419 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC
10*14118	#N/A	5-14-15	RITA A. RUSH	GASTAR EXPLORATION USA, INC	1/8+	813	450	NA	NA	NA	NA	31/184 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC	
10*14119	#N/A	5-14-15	CHARLES W. SNYDER & JUDITH A. SNYDER	GASTAR EXPLORATION USA, INC	1/8+	813	452	NA	NA	NA	NA	31/184 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC	
10*14120	#N/A	5-14-15	CAROL D. HABERLE & ABRAM HABERLE	GASTAR EXPLORATION USA, INC	1/8+	813	448	NA	NA	NA	NA	31/184 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC	
10*14121	#N/A	5-14-15	JACK D. SNYDER & GRETA A. SNYDER	GASTAR EXPLORATION USA, INC	1/8+	813	446	NA	NA	NA	NA	31/184 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Gastar Exploration USA, Inc and Gastar Exploration Inc merger	36/9 Gastar Exploration Inc to TH Exploration II, LLC	
10*14122	#N/A	5-14-15	ERIC L STOLTZFUS	GASTAR EXPLORATION INC	1/8+	833	525	NA	NA	NA	NA	NA	32/428 Gastar Exploration Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC	
10*14123	#N/A	5-14-15	TEESHA L HOLMES	GASTAR EXPLORATION INC	1/8+	836	96	NA	NA	NA	NA	NA	32/428 Gastar Exploration Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC	
10*14124	#N/A	5-14-15	BETSY G STOLTZFUS	GASTAR EXPLORATION INC	1/8+	836	94	NA	NA	NA	NA	NA	32/428 Gastar Exploration Inc to Atinum Marcellus I LLC	36/9 Gastar Exploration Inc to TH Exploration II, LLC	

AFFIDAVIT

COPY 02/08/2019

STATE OF TEXAS §
 § SS
COUNTY OF TARRANT §

On this 18th day of October, 2016, before me, the undersigned authority, personally appeared David D. Kalish ("Affiant") who being first duly sworn under oath, deposes and saith:

1. TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC are wholly owned subsidiaries of THQ Appalachia I, LLC.
2. Tug Hill Operating, LLC provides oil and gas operations services to THQ Appalachia I, LLC under an Operating Services Agreement dated July 23, 2014.
3. David D. Kalish, the Affiant, is the Vice President of Tug Hill Operating, LLC, THQ Appalachia I, LLC, TH Exploration, LLC, TH Exploration II, LLC and TH Exploration III, LLC, and;
3. Tug Hill Operating, LLC is authorized to operate and maintain the assets owned by THQ Appalachia I, LLC, including, as referenced above, TH Exploration, LLC, TH Exploration II, LLC, and TH Exploration III, LLC, including oil and gas leases, wells, pipelines, surface facilities, and other all other assets that support the business of THQ Appalachia I, LLC, and;
4. Specifically, Tug Hill Operating, LLC is authorized to submit and obtain well work permits and carry out all activities pursuant to such work permits for assets owned by TH Exploration, LLC, TH Exploration II, LLC, TH Exploration III, LLC.

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FURTHER, AFFIANT SAITH NOT.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this 18th day of October, 2016.

David D. Kalish
Affiant: David D. Kalish

JURAT

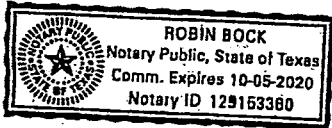
Jan Pest
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Instrument No 1416299
Date Recorded 10/19/2016
Document Type HIS
Pages Recorded 1
Book-Page 28-62
Recording Fee \$5.00
Additional \$6.00

STATE OF TEXAS §
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COUNTY OF TARRANT §

Sworn and subscribed to (or affirmed) before me on this, the 18th day of October, 2016, by David D. Kalish

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission Expires: 10-05-2020
Signature/Notary Public: Robin Bock
Name/Notary Public (Print): Robin Bock



Jan Pest
MARSHALL County 01:22:38 PM
Instrument No 1403489
Date Recorded 04/27/2016
Document Type ASB
Pages Recorded 77
Book-Page 36-9
Recording Fee \$77.00
Additional \$13.00

02/08/2019

WHEN RECORDED RETURN TO:
TE Exploration II, LLC
1320 South University Drive, Suite 500
Fort Worth, Texas 76107
Attn: David Kalish

Execution Version

ASSIGNMENT AND BILL OF SALE

STATE OF WV §
§ KNOW ALL MEN BY THESE PRESENTS:
COUNTY OF MARSHALL §

THIS ASSIGNMENT AND BILL OF SALE (this "Assignment"), dated April 7, 2016, but effective as of 7:00 A.M. Houston time on January 1, 2016 (the "Effective Time"), is between Gstar Exploration Inc., a Delaware corporation, whose address is 1331 Lamar Street, Suite 650 Houston, Texas 77010 ("Assignor"), and TE Exploration II, LLC, a Texas limited liability company, whose address is 1320 South University Drive, Suite 500, Fort Worth, Texas 76107 ("Assignee"). Assignor and Assignee are each, individually, referred to herein as a "Party" and, collectively, as the "Parties".

Capitalized terms used but not defined herein shall have the respective meanings set forth in that certain Purchase and Sale Agreement (the "Purchase Agreement"), dated as of February 19, 2016, by and between Assignor and Assignee (as successor-in-interest).

Section 1. Assignment. The conveyance and assignment herein shall be deemed effective as of the Effective Time.

For Ten Dollars (\$10.00) and other good and valuable consideration (the receipt and sufficiency of which are hereby acknowledged), Assignor does hereby forever GRANT, BARGAIN, SELL, CONVEY, ASSIGN, TRANSFER, SET OVER AND DELIVER unto Assignee, all of Assignor's right, title and interest in and to the following interests and properties (such right, title and interest described in subsections (a) through (b) of this Section 1, less and except the Excluded Assets, collectively, the "Conveyed Interests");

(a) all oil, gas and/or mineral leases of Assignor, together with any and all other right, title and interest of Assignor in and to the leasehold estates created thereby, including subleases, royalties, overriding royalties, net profits interest, carried interests or similar rights or interests in such leases, and together with all rights, privileges, benefits and powers conferred upon Assignor with respect to the use and occupation of the lands covered thereby that may be necessary, convenient or incidental to the possession and enjoyment of such leases, located in Marshall, Wetzal, Doddridge, Harrison, Lewis, Marion, and Monongalia Counties, West Virginia and Greene, Butler, Fayette, Somerset, and Clearfield Counties, Pennsylvania, including those described on Exhibit A—Part 1 attached hereto (subject to any reservations, limitations or depth restrictions described on Exhibit A—Part 1), (Assignor's interest in such leases and other right, title and interest as so limited, the "Leases");

(b) all rights and interests in, under or derived from all unitization agreements in effect with respect to any of the Leases and the units created thereby, including those described

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STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

ASSIGNMENT AND BILL OF SALE

This **ASSIGNMENT AND BILL OF SALE** (this "Assignment") dated as of August 1, 2017 (the "Signing Date"), but effective from and after 7:00 a.m., Eastern Standard Time on August 2, 2017 being the day immediately following the Signing Date (the "Effective Date"), is made by **Chevron U.S.A. Inc.**, a Pennsylvania corporation, with an address at 700 Cherrington Parkway, Coraopolis, PA 15108 ("Chevron" or "Assignor") to **TH Exploration II, LLC** and **TH Exploration, LLC**, Texas limited liability companies, with an address at 1320 S. University Drive, Suite 500, Fort Worth, TX 76107 (collectively "Assignee") and is accepted by Assignee upon the following terms and conditions.

RECITALS

- A. Assignor desires to sell, convey, transfer, assign and deliver to Assignee Assignor's Bryan 1H well and certain related assets, including certain leasehold interests, located in Marshall County, West Virginia.
- B. Through an Acreage Trade Agreement to be executed contemporaneously with this Assignment, Assignor desires to transfer, convey and assign to Assignee certain of Assignor's oil and gas leasehold interests located in Marshall County, West Virginia in exchange for the transfer, conveyance and assignment to Assignor by Assignee certain of Assignee's oil and gas leasehold interests located in Marshall County, West Virginia and Greene County, West Virginia.
- C. In consideration of the mutual promises set out in this Assignment, including execution of the Acreage Trade Agreement, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties agree to be bound by the terms of this Assignment.

1. DEFINITIONS

1.1 **Definitions.** As used in this Assignment, these words and expressions have the following meanings:

"Acreage Trade Agreement" means that certain Acreage Trade Agreement by and between Chevron U.S.A. Inc. and TH Exploration, LLC with an Effective Date of August 1, 2017 to be contemporaneously executed with this Assignment.

"Act" has the meaning given to such term in Section 9.1(C).

"Affiliate" means any legal entity which controls, is controlled by, or is under common control with, another legal entity. An entity is deemed to "control" another if it owns directly or indirectly at least fifty percent of either of the following: (A) the shares entitled to vote at a general election of directors of such other entity or (B) the voting interest in such other entity if such entity does not have either shares or directors.

"Applicable Law(s)" means all laws, principles of common law, regulations, statutes, codes, rules, orders, ordinances, permits, enforceable policies, licenses, certifications, decrees, constitutions, standards or other requirements with similar effect of any Government Entity and any binding interpretations of the foregoing.

"Assets" has the meaning given to such term in Section 2.1 of this Assignment.

"Assigned Hydrocarbons" means all Hydrocarbons produced and severed from, or allocable, after severance, to the Leases, Units, and Wells on and after the Effective Date.

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November 30, 2018

WV Department of Environmental Protection
Office of Oil & Gas
601 57th Street, SE
Charleston, WV 25304
Attention: Laura Adkins

RE: Whistlepig N-6HM

Subject: Marshall County Route 2 Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC (THO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 2 in the area reflected on the Whistlepig N-6HM well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Route and is not currently aware of any recorded document that would suggest an ownership other than THO.

If your office has any questions or concerns regarding the contents of this letter, please do not hesitate to contact me directly at 304-376-0111, or by email at amiller@tug-hilop.com.

Sincerely,

A handwritten signature in blue ink that reads "Amy L. Miller".

Amy L. Miller
Permitting Specialist

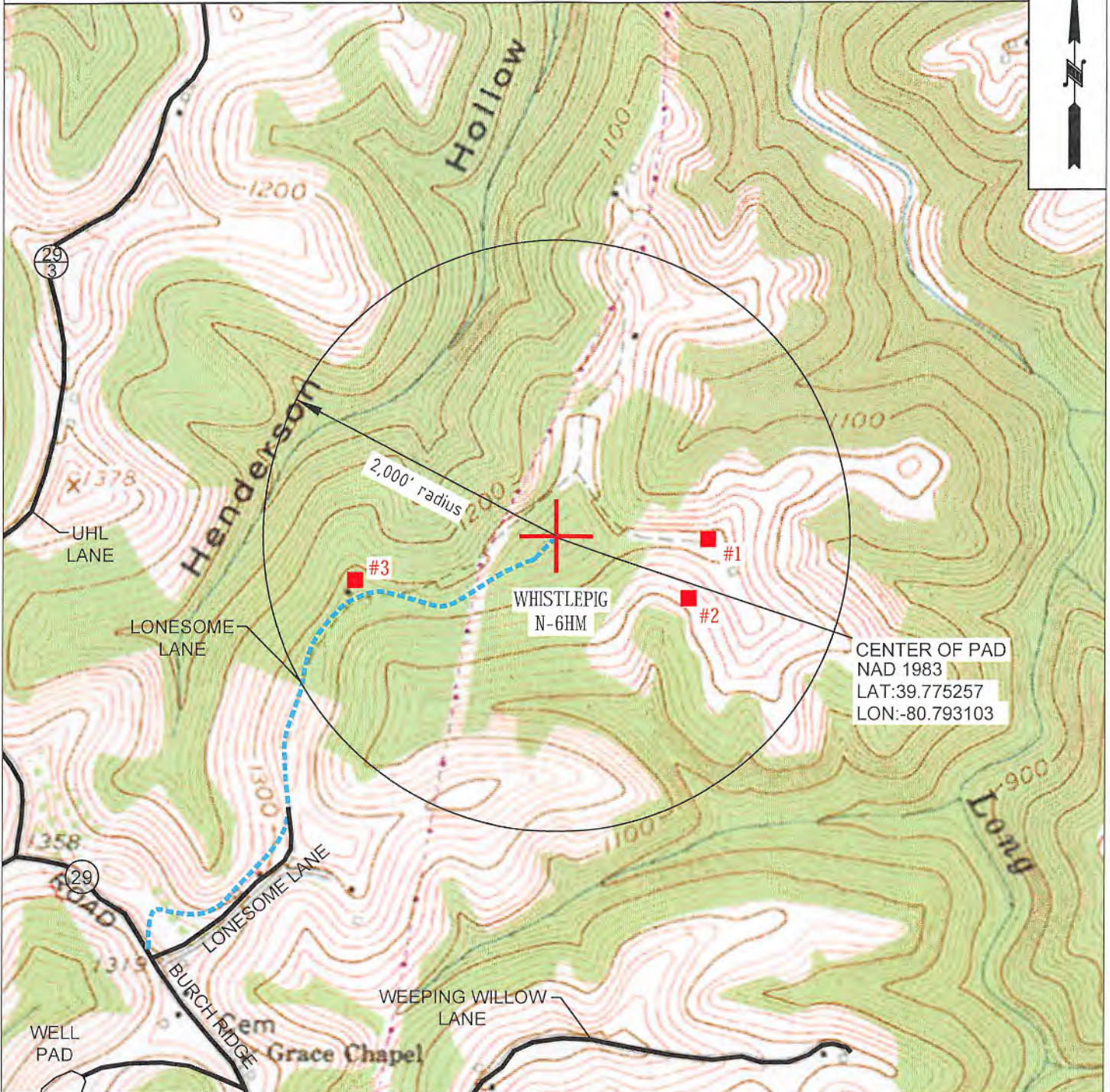
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WW-6A

PROPOSED WHISTLEPIG N-6HM

SUPPLEMENT PG 1

There appears to be Three (3) possible water sources within 2,000'.



 TUG HILL OPERATING	OPERATOR 494510851	TOPO SECTION POWHATAN POINT 7.5'	LEASE NAME WHISTLEPIG
	TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	SCALE: 1" = 1000'	DATE: 11-28-2018

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE CERTIFICATION

Date of Notice Certification: 11/30/2018

API No. 47- 051 -

Operator's Well No. Whistlepig N-6HM

Well Pad Name: Hoyt

Notice has been given:

Pursuant to the provisions in West Virginia Code § 22-6A, the Operator has provided the required parties with the Notice Forms listed below for the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>517,725.80</u>
County:	<u>Marshall</u>		Northing:	<u>4,402,834.43</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Burch Ridge Road (CR 29)</u>	
Quadrangle:	<u>Powhatan Point 7.5'</u>	Generally used farm name:	<u>Robert L. & Rebecca Shields and Donald Shields</u>	
Watershed:	<u>Fish Creek</u>			

Pursuant to West Virginia Code § 22-6A-7(b), every permit application filed under this section shall be on a form as may be prescribed by the secretary, shall be verified and shall contain the following information: (14) A certification from the operator that (i) it has provided the owners of the surface described in subdivisions (1), (2) and (4), subsection (b), section ten of this article, the information required by subsections (b) and (c), section sixteen of this article; (ii) that the requirement was deemed satisfied as a result of giving the surface owner notice of entry to survey pursuant to subsection (a), section ten of this article six-a; or (iii) the notice requirements of subsection (b), section sixteen of this article were waived in writing by the surface owner; and Pursuant to West Virginia Code § 22-6A-11(b), the applicant shall tender proof of and certify to the secretary that the notice requirements of section ten of this article have been completed by the applicant.

<p>Pursuant to West Virginia Code § 22-6A, the Operator has attached proof to this Notice Certification that the Operator has properly served the required parties with the following:</p> <p>*PLEASE CHECK ALL THAT APPLY</p> <p><input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED</p> <p><input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED</p> <p><input type="checkbox"/> 3. NOTICE OF INTENT TO DRILL or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NOTICE OF ENTRY FOR PLAT SURVEY WAS CONDUCTED or</p> <p style="padding-left: 100px;"><input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)</p> <p><input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION</p> <p><input checked="" type="checkbox"/> 5. PUBLIC NOTICE</p> <p><input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION</p>	<p style="text-align: center;">OOG OFFICE USE ONLY</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p style="text-align: center;"><i>RECEIVED</i> Office of Oil and Gas DEC 6 2018</p> <p><input type="checkbox"/> WV Department of Environmental Protection</p> <p><input type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED</p>
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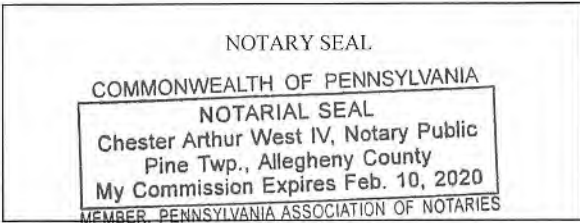
Required Attachments:

The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication date verification or the associated Affidavit of Publication. The attached Notice Forms and Certifications of Notice shall serve as proof that the required parties have been noticed as required under West Virginia Code § 22-6A. Pursuant to West Virginia Code § 22-6A-11(b), the Certification of Notice to the person may be made by affidavit of personal service, the return receipt card or other postal receipt for certified mailing.

Certification of Notice is hereby given:

THEREFORE, I Amy L. Miller, have read and understand the notice requirements within West Virginia Code § 22-6A. I certify that as required under West Virginia Code § 22-6A, I have served the attached copies of the Notice Forms, identified above, to the required parties through personal service, by registered mail or by any method of delivery that requires a receipt or signature confirmation. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this Notice Certification and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator:	<u>Tug Hill Operating, LLC</u>	Address:	<u>380 Southpointe Boulevard, Plaza II, Suite 200</u>
By:	<u>Amy L. Miller <i>Amy L. Miller</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permit Specialist - Appalachia Region</u>	Facsimile:	<u>724-338-2030</u>
Telephone:	<u>724-749-8388</u>	Email:	<u>amiller@tug-hilop.com</u>



Subscribed and sworn before me this 30th day of November 2018
[Signature] Notary Public
 My Commission Expires 2-10-2020

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at deprivacyofficer@wv.gov.

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF APPLICATION

Notice Time Requirement: notice shall be provided no later than the **filing date of permit application.**

Date of Notice: 11/30/2018 **Date Permit Application Filed:** 11/30/2018

Notice of:

- PERMIT FOR ANY WELL WORK
- CERTIFICATE OF APPROVAL FOR THE CONSTRUCTION OF AN IMPOUNDMENT OR PIT

Delivery method pursuant to West Virginia Code § 22-6A-10(b)

- PERSONAL SERVICE
- REGISTERED MAIL
- METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to W. Va. Code § 22-6A-10(b) no later than the filing date of the application, the applicant for a permit for any well work or for a certificate of approval for the construction of an impoundment or pit as required by this article shall deliver, by personal service or by registered mail or by any method of delivery that requires a receipt or signature confirmation, copies of the application, the erosion and sediment control plan required by section seven of this article, and the well plat to each of the following persons: (1) The owners of record of the surface of the tract on which the well is or is proposed to be located; (2) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for roads or other land disturbance as described in the erosion and sediment control plan submitted pursuant to subsection (c), section seven of this article; (3) The coal owner, operator or lessee, in the event the tract of land on which the well proposed to be drilled is located [sic] is known to be underlain by one or more coal seams; (4) The owners of record of the surface tract or tracts overlying the oil and gas leasehold being developed by the proposed well work, if the surface tract is to be used for the placement, construction, enlargement, alteration, repair, removal or abandonment of any impoundment or pit as described in section nine of this article; (5) Any surface owner or water purveyor who is known to the applicant to have a water well, spring or water supply source located within one thousand five hundred feet of the center of the well pad which is used to provide water for consumption by humans or domestic animals; and (6) The operator of any natural gas storage field within which the proposed well work activity is to take place. (c)(1) If more than three tenants in common or other co-owners of interests described in subsection (b) of this section hold interests in the lands, the applicant may serve the documents required upon the person described in the records of the sheriff required to be maintained pursuant to section eight, article one, chapter eleven-a of this code. (2) Notwithstanding any provision of this article to the contrary, notice to a lien holder is not notice to a landowner, unless the lien holder is the landowner. W. Va. Code R. § 35-8-5.7.a requires, in part, that the operator shall also provide the Well Site Safety Plan ("WSSP") to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Application Notice WSSP Notice E&S Plan Notice Well Plat Notice is hereby provided to:

SURFACE OWNER(s)

Name: Robert L. and Rebecca Shields (Well Pad and Access Road)
Address: RD 2 Box 53 1/2
Proctor, WV 26055-9802

Name: Donald Shields (Well Pad and Access Road) *See attachment
Address: RD 2 Box 54-A
Proctor, WV 26055

SURFACE OWNER(s) (Road and/or Other Disturbance)

Name: Ernie L. and Tammy L. Anderson
Address: RR 2, Box 58
Proctor, WV 26055
Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: CNX Land Resources, Inc. Attn: Casey Saunders
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

COAL OPERATOR

Name: _____
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)

Name: *See attachment
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

*Please attach additional forms if necessary

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Environmental Protection

API NO. 47-051 - 02/08/2019

OPERATOR WELL NO. Whistlepig N-6HM

Well Pad Name: Hoyt

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(b), notice is hereby given that the undersigned well operator has applied for a permit for well work or for a certificate of approval for the construction of an impoundment or pit.

This Notice Shall Include:

Pursuant to W. Va. Code § 22-6A-10(b), this notice shall include: (1) copies of the application; (2) the erosion and sediment control plan required by section seven of this article; and (3) the well plat.

Pursuant to W. Va. Code § 22-6A-10(f), this notice shall include: (1) a statement of the time limits for filing written comments; (2) who may file written comments; (3) the name and address of the secretary for the purpose of filing the comments and obtaining additional information; and (4) a statement that the persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

Pursuant to W. Va. Code R. § 35-8-5.7.a, the operator shall provide the Well Site Safety Plan to the surface owner and any water purveyor or surface owner subject to notice and water testing as provided in section 15 of this rule.

Pursuant to W. Va. Code R. § 35-8-15.2.c, this notice shall: (1) contain a statement of the surface owner's and water purveyor's right to request sampling and analysis; (2) advise the surface owner and water purveyor of the rebuttable presumption for contamination or deprivation of a fresh water source or supply; advise the surface owner and water purveyor that refusal to allow the operator to conduct a pre-drilling water well test constitutes a method to rebut the presumption of liability; (3) advise the surface owner and water purveyor of his or her independent right to sample and analyze any water supply at his or her own expense; advise the surface owner and water purveyor whether or not the operator will utilize an independent laboratory to analyze any sample; and (4) advise the surface owner and or water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

Additional information related to horizontal drilling may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450) or by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Well Location Restrictions

Pursuant to W. Va. Code § 22-6A-12, Wells may not be drilled within two hundred fifty feet measured horizontally from any existing water well or developed spring used for human or domestic animal consumption. The center of well pads may not be located within six hundred twenty-five feet of an occupied dwelling structure, or a building two thousand five hundred square feet or larger used to house or shelter dairy cattle or poultry husbandry. This limitation is applicable to those wells, developed springs, dwellings or agricultural buildings that existed on the date a notice to the surface owner of planned entry for surveying or staking as provided in section ten of this article or a notice of intent to drill a horizontal well as provided in subsection (b), section sixteen of this article was provided, whichever occurs first, and to any dwelling under construction prior to that date. This limitation may be waived by written consent of the surface owner transmitted to the department and recorded in the real property records maintained by the clerk of the county commission for the county in which such property is located. Furthermore, the well operator may be granted a variance by the secretary from these distance restrictions upon submission of a plan which identifies the sufficient measures, facilities or practices to be employed during well site construction, drilling and operations. The variance, if granted, shall include terms and conditions the department requires to ensure the safety and protection of affected persons and property. The terms and conditions may include insurance, bonding and indemnification, as well as technical requirements. (b) No well pad may be prepared or well drilled within one hundred feet measured horizontally from any perennial stream, natural or artificial lake, pond or reservoir, or a wetland, or within three hundred feet of a naturally reproducing trout stream. No well pad may be located within one thousand feet of a surface or ground water intake of a public water supply. The distance from the public water supply as identified by the department shall be measured as follows: (1) For a surface water intake on a lake or reservoir, the distance shall be measured from the boundary of the lake or reservoir. (2) For a surface water intake on a flowing stream, the distance shall be measured from a semicircular radius extending upstream of the surface water intake. (3) For a groundwater source, the distance shall be measured from the wellhead or spring. The department may, in its discretion, waive these distance restrictions upon submission of a plan identifying sufficient measures, facilities or practices to be employed during well site construction, drilling and operations to protect the waters of the state. A waiver, if granted, shall impose any permit conditions as the secretary considers necessary. (c) Notwithstanding the foregoing provisions of this section, nothing contained in this section prevents an operator from conducting the activities permitted or authorized by a Clean Water Act Section 404 permit or other approval from the United States Army Corps of Engineers within any waters of the state or within the restricted areas referenced in this section. (d) The well location restrictions set forth in this section shall not apply to any well on a multiple well pad if at least one of the wells was permitted prior to the effective date of this article. (e) The secretary shall, by December 31, 2012, report to the Legislature on the noise, light, dust and volatile organic compounds generated by the drilling of horizontal wells as they relate to the well location restrictions regarding occupied dwelling structures pursuant to this section. Upon a finding, if any, by the secretary that the well location restrictions regarding occupied dwelling structures are inadequate or otherwise require alteration to address the items

examined in the study required by this subsection, the secretary shall have the authority to propose for promulgation legislative rules establishing guidelines and procedures regarding reasonable levels of noise, light, dust and volatile organic compounds relating to drilling horizontal wells, including reasonable means of mitigating such factors, if necessary.

Water Well Testing:

Pursuant to West Virginia Code § 22-6A-10(d), notification shall be made, with respect to surface landowners identified in subsection (b) or water purveyors identified in subdivision (5), subsection (b) of this section, of the opportunity for testing their water well. The operator shall provide an analysis to such surface landowner or water purveyor at their request.

Water Testing Laboratories:

Pursuant to West Virginia Code § 22-6A-10(i), persons entitled to notice pursuant to subsection (b) of this section may contact the department to ascertain the names and locations of water testing laboratories in the subject area capable and qualified to test water supplies in accordance with standard accepted methods. In compiling that list of names the department shall consult with the state Bureau for Public Health and local health departments. A surface owner and water purveyor has an independent right to sample and analyze any water supply at his or her own expense. The laboratory utilized by the operator shall be approved by the agency as being certified and capable of performing sample analyses in accordance with this section.

Rebuttable Presumption for Contamination or Deprivation of a Fresh Water Source or Supply:

W. Va. Code § 22-6A-18 requires that (b) unless rebutted by one of the defenses established in subsection (c) of this section, in any action for contamination or deprivation of a fresh water source or supply within one thousand five hundred feet of the center of the well pad for horizontal well, there is a rebuttable presumption that the drilling and the oil or gas well or either was the proximate cause of the contamination or deprivation of the fresh water source or supply. (c) In order to rebut the presumption of liability established in subsection (b) of this section, the operator must prove by a preponderance of the evidence one of the following defenses: (1) The pollution existed prior to the drilling or alteration activity as determined by a predrilling or prealteration water well test. (2) The landowner or water purveyor refused to allow the operator access to the property to conduct a predrilling or prealteration water well test. (3) The water supply is not within one thousand five hundred feet of the well. (4) The pollution occurred more than six months after completion of drilling or alteration activities. (5) The pollution occurred as the result of some cause other than the drilling or alteration activity. (d) Any operator electing to preserve its defenses under subdivision (1), subsection (c) of this section shall retain the services of an independent certified laboratory to conduct the predrilling or prealteration water well test. A copy of the results of the test shall be submitted to the department and the surface owner or water purveyor in a manner prescribed by the secretary. (e) Any operator shall replace the water supply of an owner of interest in real property who obtains all or part of that owner's supply of water for domestic, agricultural, industrial or other legitimate use from an underground or surface source with a comparable water supply where the secretary determines that the water supply has been affected by contamination, diminution or interruption proximately caused by the oil or gas operation, unless waived in writing by that owner. (f) The secretary may order the operator conducting the oil or gas operation to: (1) Provide an emergency drinking water supply within twenty-four hours; (2) Provide temporary water supply within seventy-two hours; (3) Within thirty days begin activities to establish a permanent water supply or submit a proposal to the secretary outlining the measures and timetables to be used in establishing a permanent supply. The total time in providing a permanent water supply may not exceed two years. If the operator demonstrates that providing a permanent replacement water supply cannot be completed within two years, the secretary may extend the time frame on case-by-case basis; and (4) Pay all reasonable costs incurred by the real property owner in securing a water supply. (g) A person as described in subsection (b) of this section aggrieved under the provisions of subsections (b), (e) or (f) of this section may seek relief in court... (i) Notwithstanding the denial of the operator of responsibility for the damage to the real property owner's water supply or the status of any appeal on determination of liability for the damage to the real property owner's water supply, the operator may not discontinue providing the required water service until authorized to do so by the secretary or a court of competent jurisdiction.

Written Comment:

Pursuant to West Virginia Code § 22-6A-11(a), all persons described in subsection (b), section ten of this article may file written comments with the secretary as to the location or construction of the applicant's proposed well work within thirty days after the application is filed with the secretary. All persons described in West Virginia Code § 22-6A-10(b) may file written comments as to the location or construction of the applicant's proposed well work to the Secretary at:

Chief, Office of Oil and Gas
Department of Environmental Protection
601 57th St. SE
Charleston, WV 25304
(304) 926-0450

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Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water. **NOTE: YOU ARE NOT REQUIRED TO FILE ANY COMMENT.**

Time Limits and Methods for Filing Comments.

The law requires these materials to be served on or before the date the operator files its Application. You have **THIRTY (30) DAYS** after the filing date to file your comments. Comments must be filed in person or received in the mail by the Chief's office by the time stated above. You may call the Chief's office to be sure of the date. Check with your postmaster to ensure adequate delivery time or to arrange special expedited handling. If you have been contacted by the well operator and you have signed a "voluntary statement of no objection" to the planned work described in these materials, then the permit may be issued at any time.

Pursuant to West Virginia Code § 22-6A-11(c)(2), Any objections of the affected coal operators and coal seam owners and lessees shall be addressed through the processes and procedures that exist under sections fifteen, seventeen and forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article. The written comments filed by the parties entitled to notice under subdivisions (1), (2), (4), (5) and (6), subsection (b), section ten of this article shall be considered by the secretary in the permit issuance process, but the parties are not entitled to participate in the processes and proceedings that exist under sections fifteen, seventeen or forty, article six of this chapter, as applicable and as incorporated into this article by section five of this article.

Comment Requirements

Your comments must be in writing and include your name, address and telephone number, the well operator's name and well number and the approximate location of the proposed well site including district and county from the application. You may add other documents, such as sketches, maps or photographs to support your comments.

Disclaimer: All comments received will be placed on our web site <http://www.dep.wv.gov/oil-and-gas/Horizontal-Permits/Pages/default.aspx> and the applicant will automatically be forwarded an email notice that such comments have been submitted. The applicant will be expected to provide a response to comments submitted by any surface owner, water purveyor or natural gas storage operator noticed within the application.

Permit Denial or Condition

The Chief has the power to deny or condition a well work permit. Pursuant to West Virginia Code § 22-6A-8(d), the permit may not be issued or be conditioned, including conditions with respect to the location of the well and access roads prior to issuance if the director determines that:

- (1) The proposed well work will constitute a hazard to the safety of persons;
- (2) The plan for soil erosion and sediment control is not adequate or effective;
- (3) Damage would occur to publicly owned lands or resources; or
- (4) The proposed well work fails to protect fresh water sources or supplies.

A permit may also be denied under West Virginia Code § 22-6A-7(k), the secretary shall deny the issuance of a permit if the secretary determines that the applicant has committed a substantial violation of a previously issued permit for a horizontal well, including the applicable erosion and sediment control plan associated with the previously issued permit, or a substantial violation of one or more of the rules promulgated under this article, and in each instance has failed to abate or seek review of the violation within the time prescribed by the secretary pursuant to the provisions of subdivisions (1) and (2), subsection (a), section five of this article and the rules promulgated hereunder, which time may not be unreasonable.

Pursuant to West Virginia Code § 22-6A-10(g), any person entitled to submit written comments to the secretary pursuant to subsection (a), section eleven of this article, shall also be entitled to receive from the secretary a copy of the permit as issued or a copy of the order modifying or denying the permit if the person requests receipt of them as a part of the written comments submitted concerning the permit application. Such persons may request, at the time of submitting written comments, notice of the permit decision and a list of persons qualified to test water.

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API NO. 47-051 - **02/08/2019**
OPERATOR WELL NO. Whistlepig N-6HM
Well Pad Name: Hoyt

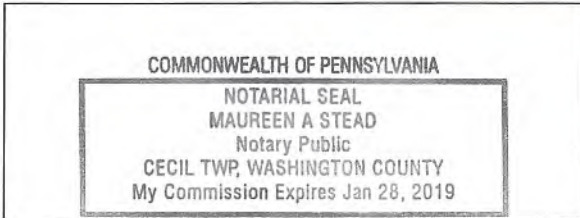
Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: amiller@tug-hill.com *amy miller*

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-838-2030

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.



Subscribed and sworn before me this 30 day of NOVEMBER 2018
Maureen A Stead Notary Public
My Commission Expires 1/29/18

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Supplement Pg. 1A

Tug Hill Operating, LLC
 380 Southpointe BLVD, Suite 200
 Canonsburg, PA 15317

WATER WELL REPORT

Well: WHISTLEPIG N-6HM
 District: Franklin
 County: Marshall
 State: WV

There appears to be Three (3) possible water sources within 2,000 feet of the above referenced well location.

Topo Spot # 1 (Hand Dug Well) TM 15 Par. 12 John D. Petrock et ux 304-242-3233 2394 Overbrook Ave Wheeling, WV 26055	Topo Spot # 2 (Spring with concrete trough) TM 15 Par. 12 John D. Petrock et ux 304-242-3233 2394 Overbrook Ave Wheeling, WV 26055	Topo Spot # 3 (Hand Dug Well) TM 14 Par. 15 Robert L. Shields, et ux 304-455-5387 2756 Burch Ridge Rd. Proctor, WV 26055
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Additional Surface Owner:

CNX Gas Company, Attn: Property Tax
 1000 Consol Energy Drive
 Canonsburg, PA 15317

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STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
NOTICE OF ENTRY FOR PLAT SURVEY

Notice Time Requirement: Notice shall be provided at least **SEVEN (7)** days but no more than **FORTY-FIVE (45)** days prior to entry

Date of Notice: 10/25/2018 **Date of Planned Entry:** 11/1/2018

Delivery method pursuant to West Virginia Code § 22-6A-10a

- PERSONAL SERVICE
 REGISTERED MAIL
 METHOD OF DELIVERY THAT REQUIRES A RECEIPT OR SIGNATURE CONFIRMATION

Pursuant to West Virginia Code § 22-6A-10(a), Prior to filing a permit application, the operator shall provide notice of planned entry on to the surface tract to conduct any plat surveys required pursuant to this article. Such notice shall be provided at least seven days but no more than forty-five days prior to such entry to: (1) The surface owner of such tract; (2) to any owner or lessee of coal seams beneath such tract that has filed a declaration pursuant to section thirty-six, article six, chapter twenty-two of this code; and (3) any owner of minerals underlying such tract in the county tax records. The notice shall include a statement that copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, which statement shall include contact information, including the address for a web page on the Secretary's web site, to enable the surface owner to obtain copies from the secretary.

Notice is hereby provided to:

SURFACE OWNER(s)

Name: Robert L. and Rebecca Shields (Well Pad and Access Road)
Address: RD 2 Box 53 1/2
Proctor, WV 26055-9802

Name: Donald Shields (Well Pad and Access Road)
Address: RD 2 Box 54-A
Proctor, WV 26055

Name: CNX Gas Company, Attn: Property Tax *See attachment
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

COAL OWNER OR LESSEE

Name: CNX Land Resources, Inc., Attn: Casey Saunders
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

MINERAL OWNER(s)

Name: Robert L. and Rebecca Shields *See attachment
Address: RD 2 Box 53 1/2
Proctor, WV 26055-9802
*please attach additional forms if necessary

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-10(a), notice is hereby given that the undersigned well operator is planning entry to conduct a plat survey on the tract of land as follows:

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.77539054; -80.79278812</u>
County: <u>Marshall</u>	Public Road Access: <u>Burch Ridge Road (CR 29)</u>
District: <u>Franklin</u>	Watershed: <u>Haynes Run - Ohio River</u>
Quadrangle: <u>Powhatan Point 7.5'</u>	Generally used farm name: <u>Robert and Rebecca Shields & Don Shields</u>

Copies of the state Erosion and Sediment Control Manual and the statutes and rules related to oil and gas exploration and production may be obtained from the Secretary, at the WV Department of Environmental Protection headquarters, located at 601 57th Street, SE, Charleston, WV 25304 (304-926-0450). Copies of such documents or additional information related to horizontal drilling may be obtained from the Secretary by visiting www.dep.wv.gov/oil-and-gas/pages/default.aspx.

Notice is hereby given by:

Well Operator: <u>Tug Hill Operating, LLC</u>	Address: <u>380 Southpointe Boulevard, Plaza II, Suite 200</u>
Telephone: <u>724-749-8388</u>	<u>Canonsburg, PA 15317</u>
Email: <u>amiller@tug-hillop.com</u>	Facsimile: <u>724-338-2030</u>

Oil and Gas Privacy Notice:

The Office of Oil and Gas processes your personal information, such as name, address and telephone number, as part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use or your personal information, please contact DEP's Chief Privacy Officer at depprivacyofficer@wv.gov.

02/08/2019

**WW-6A3 Additional Parties to Notice
Whistlepig N-6HM**

Surface Owner (Access Road)

Ernie L. and Tammy L. Anderson
RR 2, Box 58
Proctor, WV 26055

Mineral Owner

Donald Shields
RD 2, Box 54-A
Proctor, WV 26055

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**WW-6A5 – Notice of Planned Operation
Additional Parties to Notice**

Additional Surface Owners

CNX Gas Company, Attn: Property Tax
1000 Consol Energy Drive
Canonsburg, PA 15317

Ernie L. and Tammy L. Anderson
RR 2 Box 56
Proctor, WV 26055

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways1900 Kanawha Boulevard East • Building Five • Room 110
Charleston, West Virginia 25305-0430 • (304) 558-3505Thomas J. Smith, P. E.
Secretary of Transportation/
Commissioner of Highways

November 5, 2018

Jill M. Newman
Deputy CommissionerJames A. Martin, Chief
Office of Oil and Gas
Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304Subject: DOH Permits for the Hoyt North Well Pad, Marshall County
Whistlepig N-6HM Well

Dear Mr. Martin,

This well site will be accessed from Permit #06-2012-0318 transferred to Tug Hill Operating for access to the State Road for a well site located off of Marshall County Route 29 SLS.

The operator has signed a DISTRICT WIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated January 3, 2012.

Very Truly Yours,

Handwritten signature of Gary K. Clayton in blue ink.

Gary K. Clayton, P.E.
Regional Maintenance Engineer
Central Office O&G CoordinatorCc: Amy Miller
Tug Hill Operating
CH, OM, D-6
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PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

PRODUCT NAME:	CHEMICAL DESCRIPTION:	PRODUCT USE:	HAZARDOUS COMPONENT:
GBW-20C	Hemicellulase Breaker	Breaker - Water	None
ALPHA 1427		Biocide	Glutaraldehyde – CAS#000111-30-8 Quaternary ammonium chloride CAS# 007173-51-5 Alky dimethyl benzyl ammonium Chloride (C12-16) – CAS#068424-85-1 Ethanol – CAS# 000064-17-5 Water – CAS# 007732-18-5
FRAC SAND	Silica Sand (various Mesh sizes)	Proppant	Crystalline silica (quartz) CAS# 14808-60-7
S-8C, Sand	Silica Sand (100 mesh)	Sand	Silica – CAS# 14808-60-7
GW-3LDF		Gellant - Water	Petroleum Distillate Blend – Proprietary, (Not Associated with Diesel Fuel) Guar gum – CAS# 009000-30-0
FRW-18		Friction Reducer	Hydrotreated light distillate CAS# 064742-47-8
Scaletrol		Scale Inhibitor	Ethylene glycol – CAS# 000107-21-1 Diethylene glycol – CAS# 000111-46-6

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