



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

Jim Justice , Governor
Austin Caperton , Cabinet Secretary
www.dep.wv.gov

Friday, September 22, 2017
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
550 BAILEY AVENUE, SUITE 510

FORT WORTH, TX 76107

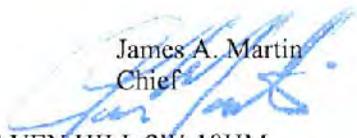
Re: Permit approval for HEAVEN HILL 2W-10HM
47-051-01955-00-00

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: HEAVEN HILL 2W-10HM
Farm Name: C.R. JR. & A.H. HAGEDORN
U.S. WELL NUMBER: 47-051-01955-00-00
Horizontal 6A / New Drill
Date Issued: 9/22/2017

Promoting a healthy environment.

09/22/2017

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.

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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. Heaven Hill 2W-10HM
Well Pad Name: Heaven Hill Unit 2

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 Meade Glen Easton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Heaven Hill 2W-10HM Well Pad Name: Heaven Hill Unit 2

3) Farm Name/Surface Owner: Charles R. Hagedorn, Jr., et ux Public Road Access: Blake Ridge Rd (Co. Rt. 21/3)

4) Elevation, current ground: 1350' Elevation, proposed post-construction: 1331'

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

(b) If Gas Shallow Deep _____
Horizontal _____

6) Existing Pad: Yes or No Yes

Handwritten signature and date: 8/24/17

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6727' - 6779', thickness of 52' and anticipated pressure of approx. 3800 psi

8) Proposed Total Vertical Depth: 6,879'

9) Formation at Total Vertical Depth: Onondoga

10) Proposed Total Measured Depth: 16,799'

11) Proposed Horizontal Leg Length: 8,675'

12) Approximate Fresh Water Strata Depths: 70', 1068'

13) Method to Determine Fresh Water Depths: Offset well reports or noticeable flow at the flowline or when need to start soaping

14) Approximate Saltwater Depths: 2167'

15) Approximate Coal Seam Depths: Sewickly Coal - 969' and Pittsburgh Coal - 1059'

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

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

WV Department of
Environmental Protection

(a) If Yes, provide Mine Info: Name: Marshall County Coal Co. / Marshall County Mine
Depth: 1059' TVD and 300' subsea level
Seam: Pittsburgh #8
Owner: Murray Energy / Consolidated Coal Co.

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	125'	120'	259FT^3(CTS)
Fresh Water	13 3/8"	NEW	J55	54.5#	1,130'	1,120'	1128ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	1,130'	1,120'	1128ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,812'	2,802'	934ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	16,799'	16,789'	4339ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		6,895'	
Liners	N/A						

8/4/17

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 1/2"	.33	1,730	1,384	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.33	1,730	1,384	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	8960		
Liners	N/A						

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Kind:	N/A			WV Department of Environmental Protection
Sizes:	N/A			
Depths Set:	N/A			

WW-6B
(10/14)

API NO. 47-051 - 01955
OPERATOR WELL NO. Heaven Hill 2W-1CHM
Well Pad Name: Heaven Hill Unit 2

8/4/17

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

Drill through the Marcellus and TD Pilot Hole 100' into the Onondaga. Log vertical section and run a solid cement plug back to proposed KOP. Drill curve and lateral per proposed well plan, run and cement production casing. Perform CBL from 60 deg to surface, make cleanout run, and stimulate.

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

Well to be completed with approximately 21,687,500 lb proppant and 335,305bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 32.98

22) Area to be disturbed for well pad only, less access road (acres): 4.57

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 Attached

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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

*Note: Attach additional sheets as needed.

WW-6B Attachment to #24

Conductor, Coal and Fresh Water Casing Cement:

Premium NE-1 + 2% CaCl

- Premium NE-1 – Class A Portland API Spec
- CaCl – Calcium Chloride

Intermediate Casing:

Premium NE-1 + 2% bwoc CaCl₂ + 46.5% Fresh Water

- Premium NE-1 – Class A Portland API spec
- CaCl₂ – Calcium Chloride
- Cello Flake – Fluid Loss Preventer

Kick Off Plug:

Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L + 38% Fresh Water

- Class H – Increased Compressive Strength Cement
- Sodium Metasilicate – Free Water Control; Early Strength Additive
- R-3 – Cement Retarder
- FP-13L – Anti-Foaming Agent
- CaCl₂ – Calcium Chloride
- Cello Flake – Fluid Loss Preventer

Production Casing Cement:

Lead: *50:50 (Poz:Premium NE-1) + .2% R-3 + .2% MPA-170 + .75 gal/100sk FP-13L*

Tail: *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*

- Poz – Fly Ash
- Premium NE-1 – Class A Portland API spec
- R-3 – Cement Retarder
- MPA-170 – Gelling Agent
- FP-13L – Anti-Foaming Agent
- ASA-301 – Free Water Control Agent
- BA-10A – Bonding Agent
- ASCA-1 – Solubility Additive

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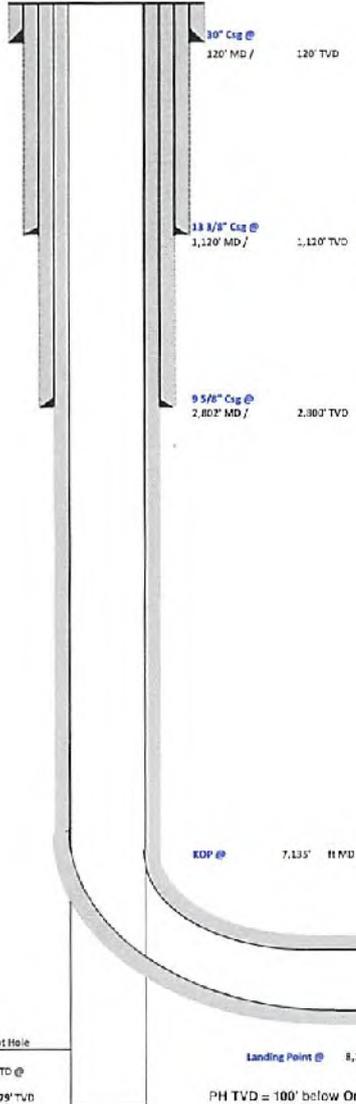


WELL NAME: Heaven Hill 2W-10HM
STATE: West Virginia **COUNTY:** Marshall
DISTRICT: Meade
OF Elev: 1,359' **GL Elev:** 1,331'
TD: 16,789'
TH Latitude: 39.81012904
TH Longitude: -80.71292784
SH Latitude: 39.78552862
SH Longitude: -80.70715467

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	1008
Sewickley Coal	969
Pittsburgh Coal	1059
Elg Line	2051
Wet	2489
Berea	2687
Gordon	2949
Rhinestreet	5071
Genesee/Burkett	5615
Tully	5620
Hamilton	5653
Marcellus	5727
Landing Depth	5716
Onondaga	5779
Pilot Hole Depth	5879

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	170'	120'	8W	BW	Surface
Surface	17.5	13 3/8	1,120'	1,120'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	2,802'	2,800'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	16,789'	6,868'	20	P110	Surface

CEMENT SUMMARY			DRILLING DETAILS		
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	1,243	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	981	A	15	Air	1 Centralizer every other jt
Production	3,890	A	14.5	Air / SCBM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to s/c



Handwritten signature and date: 8/4/17

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Lateral TD @ 16,789' ft MD
 6,868' ft TVD

51-01955

Well: Heaven Hill 2W-10 HM (slot K)
Site: Heaven Hill 2
Project: Marshall County, West Virginia
Design: rev3



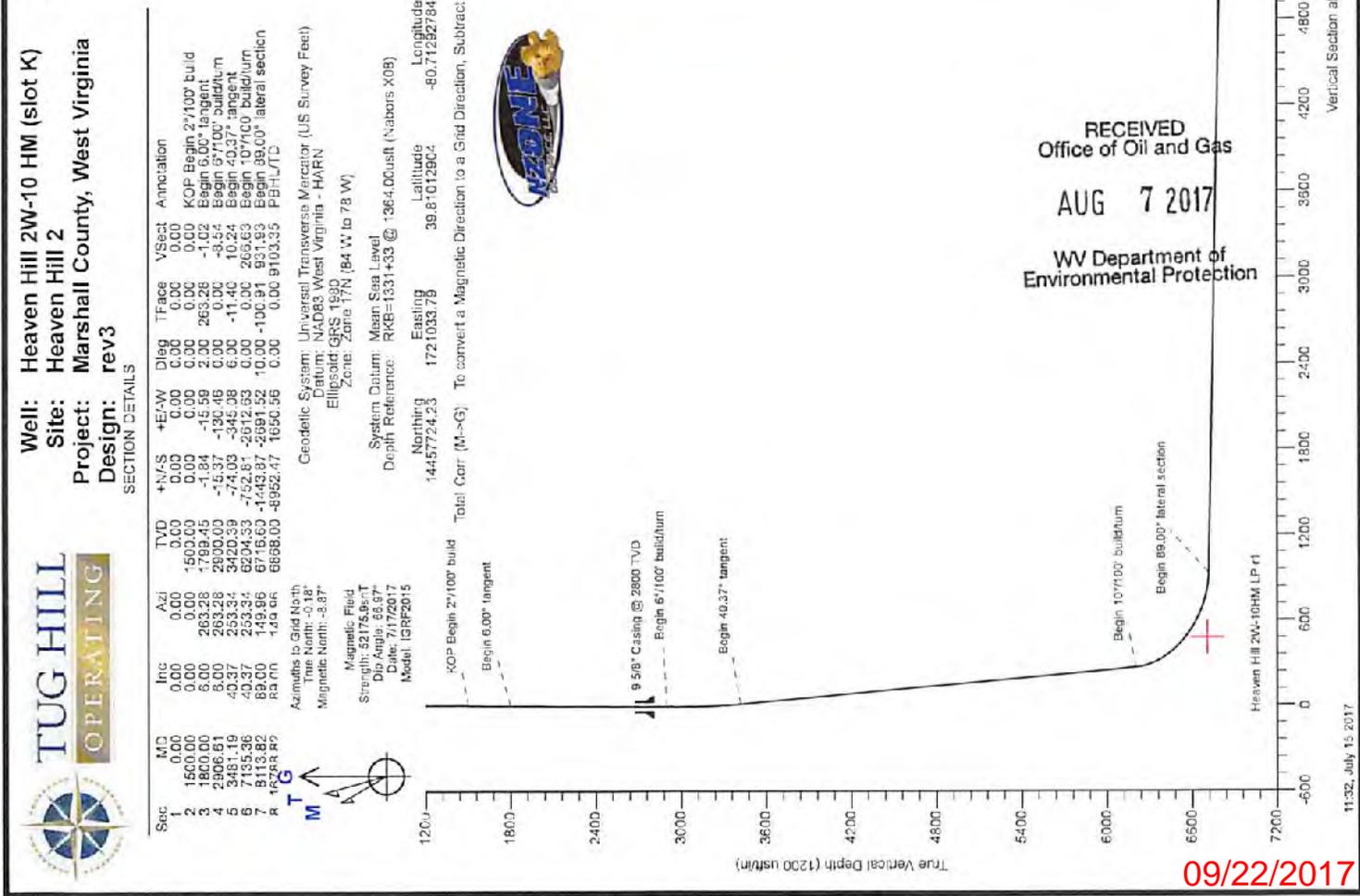
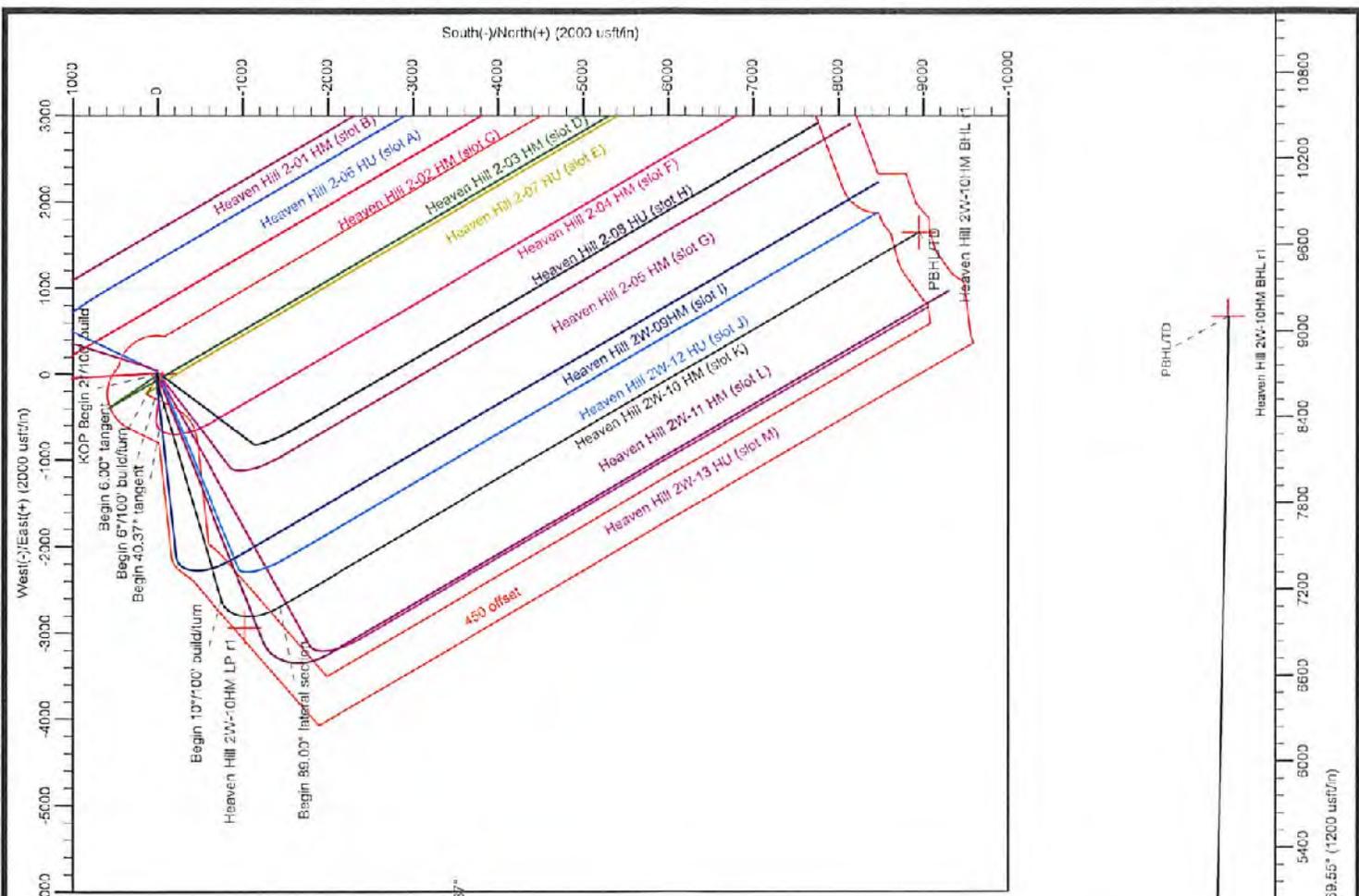
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dlog	IFace	Vsect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP Begin 2'100' build
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	Begin 6.00° tangent
3	1800.00	6.00	263.28	1789.45	-1.84	-15.59	2.00	263.28	-1.02	Begin 5.00° tangent
4	2906.61	6.00	263.28	2800.00	-15.37	-130.46	0.00	0.00	-8.54	Begin 5'7100' build/turn
5	3481.19	40.37	253.34	3420.59	-74.03	-345.08	6.00	-11.40	10.24	Begin 40.37° tangent
6	7155.36	40.37	253.34	6204.33	-752.81	-2612.63	0.00	0.00	265.63	Begin 10'7100' build/turn
7	8113.82	89.00	149.86	6716.63	-1743.87	-2891.52	10.00	-100.91	931.93	Begin 89.00° lateral section
R	16284.89		149.86	6668.00	-8952.47	1650.56	0.00	0.00	9103.35	PBHL/TD

Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD83 West Virginia - HARN
Ellipsoid: GRS 1980
Zone: Zone 17N (84 W to 78 W)
System Datum: Mean Sea Level
Depth Reference: RKB=1331+33 @ 1364.00usft (Nabors X08)
Northing: 14457724.23
Easting: 1721033.78
Latitude: 39.61012904
Longitude: -80.71282784



Total Corr: (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.67°



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Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 2W-10 HM (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1331+33 @ 1364.00usft (Nabors X08)
Project:	Marshall County, West Virginia	MD Reference:	RKB=1331+33 @ 1364.00usft (Nabors X08)
Site:	Heaven Hill 2	North Reference:	Grid
Well:	Heaven Hill 2W-10 HM (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

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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)		

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Site	Heaven Hill 2				
Site Position:		Northing:	14,457,660.30 usft	Latitude:	39.80995400
From:	Lat/Long	Easting:	1,720,974.97 usft	Longitude:	-80.71313800
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.18 "

Well	Heaven Hill 2W-10 HM (slot K)					
Well Position	+N/-S	0.00 usft	Northing:	14,457,724.23 usft	Latitude:	39.81012904
	+E/-W	0.00 usft	Easting:	1,721,033.78 usft	Longitude:	-80.71292764
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	1,331.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/17/2017	-8.69	66.97	52,175.89382128

Design	rev3				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	169.55	

Plan Survey Tool Program	Date 7/14/2017				
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	16,788.82 rev3 (Original Hole)	MWD	MWD - Standard	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (")	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,800.00	6.00	263.28	1,799.45	-1.84	-15.59	2.00	2.00	0.00	263.28	
2,906.61	6.00	263.28	2,900.00	-15.37	-130.46	0.00	0.00	0.00	0.00	
3,481.19	40.37	253.34	3,420.39	-74.03	-345.08	6.00	5.98	-1.73	-11.40	
7,135.35	40.37	253.34	6,204.33	-752.81	-2,612.63	0.00	0.00	0.00	0.00	
8,113.82	89.00	149.96	6,716.60	-1,443.87	-2,891.52	10.00	4.97	-10.57	-100.91	
16,788.82	89.00	149.96	6,868.00	-8,952.47	1,650.56	0.00	0.00	0.00	0.00	Heaven Hill 2W-10HM



Planning Report - Geographic



Database: DB_Jul2216dt_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Heaven Hill 2
 Well: Heaven Hill 2W-10 HM (slot K)
 Wellbore: Original Hole
 Design: rev3

Local Co-ordinate Reference: Well Heaven Hill 2W-10 HM (slot K)
 TVD Reference: RKB=1331+33 @ 1364.00usft (Nabors X08)
 MD Reference: RKB=1331+33 @ 1364.00usft (Nabors X08)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
100.00	0.00	0.00	100.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
200.00	0.00	0.00	200.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
300.00	0.00	0.00	300.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
400.00	0.00	0.00	400.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
500.00	0.00	0.00	500.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
600.00	0.00	0.00	600.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
700.00	0.00	0.00	700.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
800.00	0.00	0.00	800.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
900.00	0.00	0.00	900.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
1,400.00	0.00	0.00	1,400.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
1,500.00	0.00	0.00	1,500.00	0.00	0.00	14,457,724.23	1,721,033.78	39.81012904	-80.71292784
KOP Begin 2°/100' build									
1,600.00	2.00	263.28	1,599.98	-0.20	-1.73	14,457,724.02	1,721,032.05	39.81012850	-80.71293401
1,700.00	4.00	263.28	1,699.84	-0.82	-6.93	14,457,723.41	1,721,026.85	39.81012688	-80.71295253
1,800.00	6.00	263.28	1,799.45	-1.84	-15.59	14,457,722.39	1,721,018.20	39.81012414	-80.71298336
Begin 6.00° tangent									
1,900.00	6.00	263.28	1,898.90	-3.06	-25.97	14,457,721.17	1,721,007.82	39.81012087	-80.71302034
2,000.00	6.00	263.28	1,998.36	-4.28	-36.35	14,457,719.95	1,720,997.44	39.81011760	-80.71305732
2,100.00	6.00	263.28	2,097.81	-5.51	-46.73	14,457,718.72	1,720,987.06	39.81011433	-80.71309430
2,200.00	6.00	263.28	2,197.26	-6.73	-57.11	14,457,717.50	1,720,976.67	39.81011107	-80.71313128
2,300.00	6.00	263.28	2,296.71	-7.95	-67.49	14,457,716.28	1,720,966.29	39.81010780	-80.71316826
2,400.00	6.00	263.28	2,396.17	-9.18	-77.87	14,457,715.05	1,720,955.91	39.81010453	-80.71320524
2,500.00	6.00	263.28	2,495.62	-10.40	-88.25	14,457,713.83	1,720,945.53	39.81010126	-80.71324222
2,600.00	6.00	263.28	2,595.07	-11.62	-98.63	14,457,712.61	1,720,935.15	39.81009799	-80.71327920
2,700.00	6.00	263.28	2,694.52	-12.84	-109.02	14,457,711.38	1,720,924.77	39.81009473	-80.71331618
2,800.00	6.00	263.28	2,793.97	-14.07	-119.40	14,457,710.16	1,720,914.39	39.81009146	-80.71335316
2,900.00	6.00	263.28	2,893.43	-15.29	-129.78	14,457,708.94	1,720,904.01	39.81008819	-80.71339014
2,906.81	6.00	263.28	2,900.00	-15.37	-130.46	14,457,708.88	1,720,903.32	39.81008797	-80.71339258
Begin 6°/100' build/tum									
3,000.00	11.55	257.75	2,892.26	-17.93	-144.46	14,457,706.30	1,720,899.33	39.81008108	-80.71344243
3,100.00	17.52	255.69	3,089.02	-23.78	-168.85	14,457,700.45	1,720,864.94	39.81006523	-80.71352935
3,200.00	23.51	254.68	3,182.63	-32.78	-202.70	14,457,691.45	1,720,831.08	39.81004080	-80.71365002
3,300.00	29.51	254.03	3,272.08	-44.84	-245.66	14,457,679.39	1,720,788.12	39.81000805	-80.71380312
3,400.00	35.50	253.80	3,358.37	-59.83	-297.24	14,457,664.40	1,720,736.54	39.80996735	-80.71398896
3,481.19	40.37	253.34	3,420.39	-74.03	-345.08	14,457,650.20	1,720,688.71	39.80992876	-80.71415746
Begin 40.37° tangent									
3,500.00	40.37	253.34	3,434.72	-77.53	-356.75	14,457,646.70	1,720,677.04	39.80991927	-80.71419906
3,600.00	40.37	253.34	3,510.90	-96.10	-418.80	14,457,628.13	1,720,614.98	39.80986880	-80.71442024
3,700.00	40.37	253.34	3,587.09	-114.68	-480.88	14,457,609.55	1,720,552.93	39.80981833	-80.71464142
3,800.00	40.37	253.34	3,663.27	-133.25	-542.91	14,457,590.98	1,720,490.87	39.80976786	-80.71486260
3,900.00	40.37	253.34	3,739.46	-151.83	-604.96	14,457,572.40	1,720,428.82	39.80971739	-80.71508377
4,000.00	40.37	253.34	3,815.64	-170.40	-667.02	14,457,553.82	1,720,366.77	39.80966692	-80.71530495
4,100.00	40.37	253.34	3,891.83	-188.98	-729.07	14,457,535.25	1,720,304.71	39.80961645	-80.71552613
4,200.00	40.37	253.34	3,968.02	-207.56	-791.13	14,457,516.67	1,720,242.66	39.80956598	-80.71574730
4,300.00	40.37	253.34	4,044.20	-226.13	-853.18	14,457,498.10	1,720,180.60	39.80951551	-80.71596848
4,400.00	40.37	253.34	4,120.39	-244.71	-915.23	14,457,479.52	1,720,118.55	39.80946503	-80.71618965
4,500.00	40.37	253.34	4,196.57	-263.28	-977.29	14,457,460.95	1,720,056.50	39.80941458	-80.71641083
4,600.00	40.37	253.34	4,272.76	-281.86	-1,039.34	14,457,442.37	1,719,994.44	39.80936409	-80.71663200
4,700.00	40.37	253.34	4,348.94	-300.43	-1,101.40	14,457,423.80	1,719,932.39	39.80931361	-80.71685318



Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 2W-10 HM (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1331+33 @ 1364.00usft (Nabors X08)
Project:	Marshall County, West Virginia	MD Reference:	RKB=1331+33 @ 1364.00usft (Nabors X08)
Site:	Heaven Hill 2	North Reference:	Grid
Well:	Heaven Hill 2W-10 HM (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
4,800.00	40.37	253.34	4,425.13	-319.01	-1,163.45	14,457,405.22	1,719,870.33	39.80926314	-80.71707435	
4,900.00	40.37	253.34	4,501.32	-337.58	-1,225.50	14,457,388.84	1,719,808.28	39.80921267	-80.71728552	
5,000.00	40.37	253.34	4,577.50	-356.16	-1,287.56	14,457,368.07	1,719,746.23	39.80916219	-80.71751670	
5,100.00	40.37	253.34	4,653.69	-374.74	-1,349.61	14,457,349.49	1,719,684.17	39.80911171	-80.71773787	
5,200.00	40.37	253.34	4,729.87	-393.31	-1,411.67	14,457,330.92	1,719,622.12	39.80908124	-80.71795904	
5,300.00	40.37	253.34	4,806.06	-411.89	-1,473.72	14,457,312.34	1,719,560.06	39.80901076	-80.71818022	
5,400.00	40.37	253.34	4,882.24	-430.48	-1,535.77	14,457,293.77	1,719,498.01	39.80896029	-80.71840139	
5,500.00	40.37	253.34	4,958.43	-449.04	-1,597.83	14,457,275.19	1,719,435.95	39.80890981	-80.71862256	
5,600.00	40.37	253.34	5,034.61	-467.61	-1,659.88	14,457,256.62	1,719,373.90	39.80885933	-80.71884373	
5,700.00	40.37	253.34	5,110.80	-486.19	-1,721.94	14,457,238.04	1,719,311.85	39.80880885	-80.71906490	
5,800.00	40.37	253.34	5,186.99	-504.78	-1,783.99	14,457,219.46	1,719,249.79	39.80875837	-80.71928607	
5,900.00	40.37	253.34	5,263.17	-523.34	-1,846.04	14,457,200.89	1,719,187.74	39.80870790	-80.71950725	
6,000.00	40.37	253.34	5,339.36	-541.92	-1,908.10	14,457,182.31	1,719,125.69	39.80865742	-80.71972842	
6,100.00	40.37	253.34	5,415.54	-560.49	-1,970.15	14,457,163.74	1,719,063.63	39.80860694	-80.71994959	
6,200.00	40.37	253.34	5,491.73	-579.07	-2,032.21	14,457,145.16	1,719,001.58	39.80855646	-80.72017076	
6,300.00	40.37	253.34	5,567.91	-597.64	-2,094.26	14,457,126.59	1,718,939.52	39.80850598	-80.72039192	
6,400.00	40.37	253.34	5,644.10	-616.22	-2,156.31	14,457,108.01	1,718,877.47	39.80845550	-80.72061309	
6,500.00	40.37	253.34	5,720.29	-634.79	-2,218.37	14,457,089.44	1,718,815.42	39.80840501	-80.72083426	
6,600.00	40.37	253.34	5,796.47	-653.37	-2,280.42	14,457,070.86	1,718,753.36	39.80835453	-80.72105543	
6,700.00	40.37	253.34	5,872.66	-671.94	-2,342.48	14,457,052.28	1,718,691.31	39.80830405	-80.72127660	
6,800.00	40.37	253.34	5,948.84	-690.52	-2,404.53	14,457,033.71	1,718,629.25	39.80825357	-80.72149777	
6,900.00	40.37	253.34	6,025.03	-709.10	-2,466.58	14,457,015.13	1,718,567.20	39.80820308	-80.72171893	
7,000.00	40.37	253.34	6,101.21	-727.67	-2,528.64	14,456,996.56	1,718,505.15	39.80815260	-80.72194010	
7,100.00	40.37	253.34	6,177.40	-746.25	-2,590.69	14,456,977.98	1,718,443.09	39.80810212	-80.72216127	
7,135.38	40.37	253.34	6,204.34	-752.82	-2,612.63	14,456,971.41	1,718,421.15	39.80808427	-80.72223947	
Begin 10°/100' build/turn										
7,200.00	39.57	243.34	6,253.93	-766.07	-2,651.13	14,456,956.16	1,718,382.65	39.80804269	-80.72237672	
7,300.00	40.06	227.71	6,330.93	-804.11	-2,703.54	14,456,920.12	1,718,330.25	39.80794418	-80.72256373	
7,400.00	42.55	213.01	6,406.22	-854.24	-2,745.88	14,456,869.99	1,718,287.91	39.80780686	-80.72271503	
7,500.00	46.72	200.05	6,477.52	-916.95	-2,776.86	14,456,807.28	1,718,256.93	39.80763492	-80.72282604	
7,600.00	52.15	188.97	6,542.64	-990.32	-2,795.54	14,456,733.91	1,718,238.24	39.80743357	-80.72289338	
7,700.00	58.46	179.53	6,599.63	-1,072.14	-2,801.36	14,456,652.09	1,718,232.42	39.80720893	-80.72291501	
7,800.00	65.38	171.33	6,646.73	-1,159.91	-2,794.14	14,456,564.32	1,718,239.65	39.80696783	-80.72289026	
7,900.00	72.69	164.02	6,682.53	-1,250.96	-2,774.09	14,456,473.27	1,718,259.69	39.80671760	-80.72281989	
8,000.00	80.25	157.28	6,705.93	-1,342.54	-2,741.84	14,456,381.69	1,718,291.95	39.80646563	-80.72270603	
8,100.00	87.93	150.84	6,716.23	-1,431.86	-2,698.34	14,456,292.37	1,718,335.44	39.80622018	-80.72255216	
8,113.82	89.00	149.96	6,718.60	-1,443.87	-2,691.52	14,456,280.36	1,718,342.26	39.80618713	-80.72252800	
Begin 89.00° lateral section										
8,200.00	89.00	149.96	6,718.10	-1,518.48	-2,648.38	14,456,205.77	1,718,385.40	39.80598192	-80.72237523	
8,300.00	89.00	149.96	6,719.85	-1,605.01	-2,598.33	14,456,119.21	1,718,435.45	39.80574379	-80.72219796	
8,400.00	89.00	149.96	6,721.60	-1,691.57	-2,548.28	14,456,032.66	1,718,485.50	39.80550566	-80.72202070	
8,500.00	89.00	149.96	6,723.34	-1,778.12	-2,498.23	14,455,946.11	1,718,535.58	39.80526753	-80.72184344	
8,600.00	89.00	149.96	6,725.09	-1,864.68	-2,448.17	14,455,859.55	1,718,585.61	39.80502941	-80.72166617	
8,700.00	89.00	149.96	6,726.83	-1,951.23	-2,398.12	14,455,773.00	1,718,635.66	39.80479128	-80.72148891	
8,800.00	89.00	149.96	6,728.58	-2,037.79	-2,348.07	14,455,686.44	1,718,685.72	39.80455315	-80.72131165	
8,900.00	89.00	149.96	6,730.32	-2,124.34	-2,298.01	14,455,599.89	1,718,735.77	39.80431502	-80.72113440	
9,000.00	89.00	149.96	6,732.07	-2,210.90	-2,247.96	14,455,513.33	1,718,785.82	39.80407689	-80.72095714	
9,100.00	89.00	149.96	6,733.81	-2,297.45	-2,197.91	14,455,426.78	1,718,835.87	39.80383876	-80.72077988	
9,200.00	89.00	149.96	6,735.56	-2,384.00	-2,147.86	14,455,340.22	1,718,885.93	39.80360063	-80.72060263	
9,300.00	89.00	149.96	6,737.30	-2,470.56	-2,097.80	14,455,253.67	1,718,935.98	39.80336250	-80.72042538	
9,400.00	89.00	149.96	6,739.05	-2,557.11	-2,047.75	14,455,167.12	1,718,986.03	39.80312437	-80.72024812	
9,500.00	89.00	149.96	6,740.79	-2,643.67	-1,997.70	14,455,080.56	1,719,036.09	39.80288624	-80.72007087	
9,600.00	89.00	149.96	6,742.54	-2,730.22	-1,947.65	14,454,994.01	1,719,086.14	39.80264811	-80.71989362	
9,700.00	89.00	149.96	6,744.28	-2,816.78	-1,897.59	14,454,907.45	1,719,136.19	39.80240996	-80.71971638	

WV Department of Environmental Protection



Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 2W-10 HM (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1331+33 @ 1364.00usft (Nabors X08)
Project:	Marshall County, West Virginia	MD Reference:	RKB=1331+33 @ 1364.00usft (Nabors X08)
Site:	Heaven Hill 2	North Reference:	Grid
Well:	Heaven Hill 2W-10 HM (slot K)	Survey Calculation Method:	Minimum Curvature
Wallbore:	Original Hole		
Design:	rev3		

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Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,800.00	89.00	149.96	6,746.03	-2,903.33	-1,847.54	14,454,820.90	1,719,186.24	39.80217185	-80.71953913	
9,900.00	89.00	149.96	6,747.77	-2,989.89	-1,797.49	14,454,734.34	1,719,236.30	39.80193372	-80.71936188	
10,000.00	89.00	149.96	6,749.52	-3,076.44	-1,747.43	14,454,647.79	1,719,286.35	39.80169559	-80.71918464	
10,100.00	89.00	149.96	6,751.26	-3,162.99	-1,697.38	14,454,561.23	1,719,336.40	39.80145746	-80.71900739	
10,200.00	89.00	149.96	6,753.01	-3,249.55	-1,647.33	14,454,474.68	1,719,386.46	39.80121932	-80.71883015	
10,300.00	89.00	149.96	6,754.75	-3,336.10	-1,597.28	14,454,388.13	1,719,436.51	39.80098119	-80.71865291	
10,400.00	89.00	149.96	6,756.50	-3,422.66	-1,547.22	14,454,301.57	1,719,486.56	39.80074306	-80.71847567	
10,500.00	89.00	149.96	6,758.25	-3,509.21	-1,497.17	14,454,215.02	1,719,536.61	39.80050493	-80.71829843	
10,600.00	89.00	149.96	6,759.99	-3,595.77	-1,447.12	14,454,128.46	1,719,586.67	39.80026679	-80.71812119	
10,700.00	89.00	149.96	6,761.74	-3,682.32	-1,397.06	14,454,041.91	1,719,636.72	39.80002866	-80.71794396	
10,800.00	89.00	149.96	6,763.48	-3,768.88	-1,347.01	14,453,955.35	1,719,686.77	39.79979053	-80.71776672	
10,900.00	89.00	149.96	6,765.23	-3,855.43	-1,296.96	14,453,868.80	1,719,736.83	39.79955239	-80.71758949	
11,000.00	89.00	149.96	6,766.97	-3,941.98	-1,246.91	14,453,782.24	1,719,786.88	39.79931426	-80.71741226	
11,100.00	89.00	149.96	6,768.72	-4,028.54	-1,196.85	14,453,695.69	1,719,836.93	39.79907612	-80.71723503	
11,200.00	89.00	149.96	6,770.46	-4,115.09	-1,146.80	14,453,609.14	1,719,886.98	39.79883799	-80.71705790	
11,300.00	89.00	149.96	6,772.21	-4,201.65	-1,096.75	14,453,522.58	1,719,937.04	39.79859985	-80.71688057	
11,400.00	89.00	149.96	6,773.95	-4,288.20	-1,046.69	14,453,436.03	1,719,987.09	39.79836172	-80.71670334	
11,500.00	89.00	149.96	6,775.70	-4,374.76	-996.64	14,453,349.47	1,720,037.14	39.79812358	-80.71652611	
11,600.00	89.00	149.96	6,777.44	-4,461.31	-946.59	14,453,262.92	1,720,087.20	39.79788545	-80.71634889	
11,700.00	89.00	149.96	6,779.19	-4,547.87	-896.54	14,453,176.36	1,720,137.25	39.79764731	-80.71617166	
11,800.00	89.00	149.96	6,780.93	-4,634.42	-846.48	14,453,089.81	1,720,187.30	39.79740917	-80.71599444	
11,900.00	89.00	149.96	6,782.68	-4,720.97	-796.43	14,453,003.26	1,720,237.35	39.79717104	-80.71581722	
12,000.00	89.00	149.96	6,784.42	-4,807.53	-746.38	14,452,916.70	1,720,287.41	39.79693290	-80.71564000	
12,100.00	89.00	149.96	6,786.17	-4,894.08	-696.32	14,452,830.15	1,720,337.46	39.79669476	-80.71546278	
12,200.00	89.00	149.96	6,787.91	-4,980.64	-646.27	14,452,743.59	1,720,387.51	39.79645662	-80.71528556	
12,300.00	89.00	149.96	6,789.66	-5,067.19	-596.22	14,452,657.04	1,720,437.57	39.79621849	-80.71510835	
12,400.00	89.00	149.96	6,791.40	-5,153.75	-546.17	14,452,570.48	1,720,487.62	39.79598035	-80.71493113	
12,500.00	89.00	149.96	6,793.15	-5,240.30	-496.11	14,452,483.93	1,720,537.67	39.79574221	-80.71475392	
12,600.00	89.00	149.96	6,794.90	-5,326.86	-446.06	14,452,397.37	1,720,587.72	39.79550407	-80.71457670	
12,700.00	89.00	149.96	6,796.64	-5,413.41	-396.01	14,452,310.82	1,720,637.78	39.79526593	-80.71439949	
12,800.00	89.00	149.96	6,798.39	-5,499.96	-345.95	14,452,224.27	1,720,687.83	39.79502779	-80.71422228	
12,900.00	89.00	149.96	6,800.13	-5,586.52	-295.90	14,452,137.71	1,720,737.88	39.79478965	-80.71404507	
13,000.00	89.00	149.96	6,801.88	-5,673.07	-245.85	14,452,051.16	1,720,787.93	39.79455151	-80.71386786	
13,100.00	89.00	149.96	6,803.62	-5,759.63	-195.80	14,451,964.60	1,720,837.99	39.79431337	-80.71369066	
13,200.00	89.00	149.96	6,805.37	-5,846.18	-145.74	14,451,878.05	1,720,888.04	39.79407523	-80.71351345	
13,300.00	89.00	149.96	6,807.11	-5,932.74	-95.69	14,451,791.49	1,720,938.09	39.79383709	-80.71333625	
13,400.00	89.00	149.96	6,808.86	-6,019.29	-45.64	14,451,704.94	1,720,988.15	39.79359895	-80.71315904	
13,500.00	89.00	149.96	6,810.60	-6,105.84	4.41	14,451,618.38	1,721,038.20	39.79336081	-80.71298184	
13,600.00	89.00	149.96	6,812.35	-6,192.40	54.47	14,451,531.83	1,721,088.25	39.79312267	-80.71280464	
13,700.00	89.00	149.96	6,814.09	-6,278.95	104.52	14,451,445.28	1,721,138.30	39.79288452	-80.71262744	
13,800.00	89.00	149.96	6,815.84	-6,365.51	154.57	14,451,358.72	1,721,188.36	39.79264638	-80.71245024	
13,900.00	89.00	149.96	6,817.58	-6,452.06	204.63	14,451,272.17	1,721,238.41	39.79240824	-80.71227304	
14,000.00	89.00	149.96	6,819.33	-6,538.62	254.68	14,451,185.61	1,721,288.46	39.79217010	-80.71209585	
14,100.00	89.00	149.96	6,821.07	-6,625.17	304.73	14,451,099.06	1,721,338.52	39.79193195	-80.71191865	
14,200.00	89.00	149.96	6,822.82	-6,711.73	354.78	14,451,012.50	1,721,388.57	39.79169381	-80.71174146	
14,300.00	89.00	149.96	6,824.56	-6,798.28	404.84	14,450,925.95	1,721,438.62	39.79145567	-80.71156427	
14,400.00	89.00	149.96	6,826.31	-6,884.83	454.89	14,450,839.39	1,721,488.67	39.79121752	-80.71138708	
14,500.00	89.00	149.96	6,828.05	-6,971.39	504.94	14,450,752.84	1,721,538.73	39.79097938	-80.71120989	
14,600.00	89.00	149.96	6,829.80	-7,057.94	555.00	14,450,666.29	1,721,588.78	39.79074124	-80.71103270	
14,700.00	89.00	149.96	6,831.55	-7,144.50	605.05	14,450,579.73	1,721,638.83	39.79050309	-80.71085551	
14,800.00	89.00	149.96	6,833.29	-7,231.05	655.10	14,450,493.18	1,721,688.89	39.79026495	-80.71067833	
14,900.00	89.00	149.96	6,835.04	-7,317.61	705.15	14,450,406.62	1,721,738.94	39.79002680	-80.71050114	
15,000.00	89.00	149.96	6,836.78	-7,404.16	755.21	14,450,320.07	1,721,788.99	39.78978866	-80.71032396	
15,100.00	89.00	149.96	6,838.53	-7,490.72	805.26	14,450,233.51	1,721,839.04	39.78955051	-80.71014677	
15,200.00	89.00	149.96	6,840.27	-7,577.27	855.31	14,450,146.96	1,721,889.10	39.78931236	-80.70996959	



Planning Report - Geographic



Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Heaven Hill 2W-10 HM (slot K)
Company:	Tug Hill Operating LLC	TVD Reference:	RKB=1331+33 @ 1364.00usft (Nabors X08)
Project:	Marshall County, West Virginia	MD Reference:	RKB=1331+33 @ 1364.00usft (Nabors X08)
Site:	Heaven Hill 2	North Reference:	Grid
Well:	Heaven Hill 2W-10 HM (slot K)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
15,300.00	89.00	149.96	6,842.02	-7,663.82	905.37	14,450,060.40	1,721,939.15	39.76907422	-80.70979241	
15,400.00	89.00	149.96	6,843.76	-7,750.38	955.42	14,449,973.85	1,721,889.20	39.78883607	-80.70981523	
15,500.00	89.00	149.96	6,845.51	-7,836.93	1,005.47	14,449,887.30	1,722,039.26	39.76859792	-80.70943806	
15,600.00	89.00	149.96	6,847.25	-7,923.49	1,055.52	14,449,800.74	1,722,089.31	39.78835978	-80.70926088	
15,700.00	89.00	149.96	6,849.00	-8,010.04	1,105.58	14,449,714.19	1,722,139.36	39.76812163	-80.70908370	
15,800.00	89.00	149.96	6,850.74	-8,096.60	1,155.63	14,449,627.63	1,722,189.41	39.78788348	-80.70890653	
15,900.00	89.00	149.96	6,852.49	-8,183.15	1,205.68	14,449,541.08	1,722,239.47	39.76764533	-80.70872936	
16,000.00	89.00	149.96	6,854.23	-8,269.71	1,255.74	14,449,454.52	1,722,289.52	39.78740719	-80.70855219	
16,100.00	89.00	149.96	6,855.98	-8,356.26	1,305.79	14,449,367.97	1,722,339.57	39.78716904	-80.70837502	
16,200.00	89.00	149.96	6,857.72	-8,442.81	1,355.84	14,449,281.41	1,722,389.63	39.78693089	-80.70819785	
16,300.00	89.00	149.96	6,859.47	-8,529.37	1,405.89	14,449,194.86	1,722,439.68	39.78669274	-80.70802068	
16,400.00	89.00	149.96	6,861.21	-8,615.92	1,455.95	14,449,108.31	1,722,489.73	39.76645459	-80.70784351	
16,500.00	89.00	149.96	6,862.96	-8,702.48	1,506.00	14,449,021.75	1,722,539.78	39.78821644	-80.70766635	
16,600.00	89.00	149.96	6,864.70	-8,789.03	1,556.05	14,448,935.20	1,722,589.84	39.76597829	-80.70748918	
16,700.00	89.00	149.96	6,866.45	-8,875.59	1,606.11	14,448,848.64	1,722,639.89	39.78574014	-80.70731202	
16,786.82	89.00	149.96	6,868.00	-8,952.46	1,650.56	14,448,771.76	1,722,684.35	39.76552862	-80.70715466	

PBHL/TD

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Heaven Hill 2W-10HM L - hit/miss target - Shape - Point	0.00	0.01	6,708.00	-1,029.33	-2,931.29	14,456,694.90	1,718,102.50	39.80732759	-80.72337717	
- plan misses target center by 174.13usft at 7704.11usft MD (6601.77 TVD, -1075.64 N, -2801.32 E)										
Heaven Hill 2W-10HM B - plan hits target center - Point	0.00	0.01	6,868.00	-8,952.47	1,650.56	14,448,771.76	1,722,684.35	39.78552861	-80.70715466	

Casing Points						
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")		
1,125.00	1,125.00	13 3/8" Casing @ 1120 TVD	13-3/8	17-1/2		
2,811.09	2,805.00	9 5/8" Casing @ 2800 TVD	9-5/8	12-1/4		

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,500.00	1,500.00	0.00	0.00	KOP Begin 2"/100' build
1,800.00	1,799.45	-1.84	-15.59	Begin 6.00° tangent
2,906.61	2,900.00	-15.37	-130.46	Begin 6"/100' build/turn
3,481.19	3,420.39	-74.03	-345.08	Begin 40.37° tangent
7,135.36	6,204.34	-752.82	-2,612.63	Begin 10"/100' build/turn
8,113.82	6,716.60	-1,443.87	-2,691.52	Begin 89.00° lateral section
16,786.82	6,868.00	-8,952.46	1,650.56	PBHL/TD

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Area of Review**Sources of information to Support 35CSR8 - 5.11: 9.3 et seq.**

Description of process to identify potential pathways for well communication during hydraulic fracturing activities.

Data Sources Reviewed:

1. IHS Well Data service: Public nationwide data service that pulls directly from State agency Oil and Gas databases
2. Farm Maps
3. Topo Maps: Recent and older (contact WVGES)
4. Check with DPS

Contacted Devin Ducoeur 724-705-0444, dducoeur@dpslandservices.com DPS GIS (12/19/2016) to have him make maps of the wellbores with his information. DPS utilizes WVGES maps for their mapping seems it as the best publicly available. See attached map he provided.

Request maps for:

1. Wellbore with IHS All Wells Layer
2. Map with Farm lines overlain and any well spots identified on Farm Maps
3. More recent (1970s vintage) topos and older topos

Discussion with Phil Dinterman WVGES GIS Department (7/15/2016)

- WVGES has plotted every well spot they have access to and are aware of with that contains a coordinate. 30000, 70000, and 90000 series wells are available via the WVGES online map. Some locations aren't great due to vintage and manipulation of maps through time
- 30000 series – any well drilled prior to 1929 – APIs were not assigned to original wells
- 70000 series – Well spots pulled from old Farm line maps that the WVGES has access to
- 90000 series – Any sources that the WVGES has access that shows a well spot but has no additional supporting information. DEP does not have 90000 series on their maps.
- There can be duplication between wells in the 3 series
- Phil indicated that other Operators are providing a screenshot of the WVGES map with their planned well and using that for permits

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Permit well - Heaven Hill 2W-10HM

Wells within 500' Buffer

Note: Well spots depicted on Area of Review map (page 3) are derived from State held coordinates. The spots may differ from those depicted on the Well Plat because the Plat locations represent actual field surveyed locations. Please refer to the Plat for surveyed well spots

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705101918	Tug Hill Operating	6879' TVD proposed	Marcellus proposed	None	Yes. The well is planned to be drilled into the Marcellus Shale. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Marcellus wells	Tug Hill Operating permitted offset Marcellus well. Not yet drilled
4705101906	Tug Hill Operating	6879' TVD proposed	Marcellus proposed	None	Yes. The well is planned to be drilled into the Marcellus Shale. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Marcellus wells	Tug Hill Operating permitted offset Marcellus well. Not yet drilled
4705101907	Tug Hill Operating	6879' TVD proposed	Marcellus proposed	None	Yes. The well is planned to be drilled into the Marcellus Shale. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Marcellus wells	Tug Hill Operating permitted offset Marcellus well. Not yet drilled
4705101908	Tug Hill Operating	6879' TVD proposed	Marcellus proposed	None	Yes. The well is planned to be drilled into the Marcellus Shale. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Marcellus wells	Tug Hill Operating permitted offset Marcellus well. Not yet drilled
4705101884	Tug Hill Operating	6879' TVD proposed	Marcellus proposed	None	Yes. The well is planned to be drilled into the Marcellus Shale. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Marcellus wells	Tug Hill Operating permitted offset Marcellus well. Not yet drilled

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is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Comments
4705101910	Tug Hill Operating	11784' TVD Proposed	Utica Proposed	None	Yes. The well is planned to be drilled into the Point Pleasant Formation. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Point Pleasant wells Tug Hill Operating permitted offset Point Pleasant well. Not yet drilled
4705101911	Tug Hill Operating	11784' TVD Proposed	Utica Proposed	None	Yes. The well is planned to be drilled into the Point Pleasant Formation. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Point Pleasant wells Tug Hill Operating permitted offset Point Pleasant well. Not yet drilled
4705101912	Tug Hill Operating	11784' TVD Proposed	Utica Proposed	None	Yes. The well is planned to be drilled into the Point Pleasant Formation. However, proper casing and cementing should prevent this well from being a conduit to surface for offset Point Pleasant wells Tug Hill Operating permitted offset Point Pleasant well. Not yet drilled
4705100790	McElroy Coal Company	Unknown	Unknown	Unknown	Unknown but unlikely, Well is probably a shallow coal test bore Plug date 3/29/1994



[Data Relationships](#)
[Source Code Translations](#)
[Permit Numbers Search](#)
[License Forms](#)
[Contact Information](#)
[WVGES Main](#)
[PipelinePlus - New](#)

Select County: (051) Marshall Select datatypes: (Check All)

Enter Permit #: 00790

Location Production Plugging
 Owner/Completion Stratigraphy Sample
 Pay/ShowWater Logs Bore Hole Log

Get Data Reset

WV Geological & Economic Survey: **Well: County = 51 Permit = 00790** Report Time: Saturday, J...

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_45	LAT_DD	LONG_DD	UTME	UTMN
4725102790	Marshall	790	Needle	Qm Easton	Carroll	39.784219	-80.713781	824804	4404881.0

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR	AT_COMPLETION
4725102790	3/29/1994		Plugging, Completed	J.F. Crow Estate			N-39	John Franklin Crow heirs		McElroy Coal Company	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FTH	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD
4725102790	3/29/1994	3/17/1994	TTD	Qm Easton			unclassified	unclassified		not available	unknown	unknown	

There is no Pay data for this well

There is no Production Gas data for this well

There is no Production Oil data for this well ** some operators may have reported NGL under Oil

There is no Production NGL data for this well ** some operators may have reported NGL under Oil

There is no Stratigraphy data for this well

There is no Wireline (E-Log) data for this well

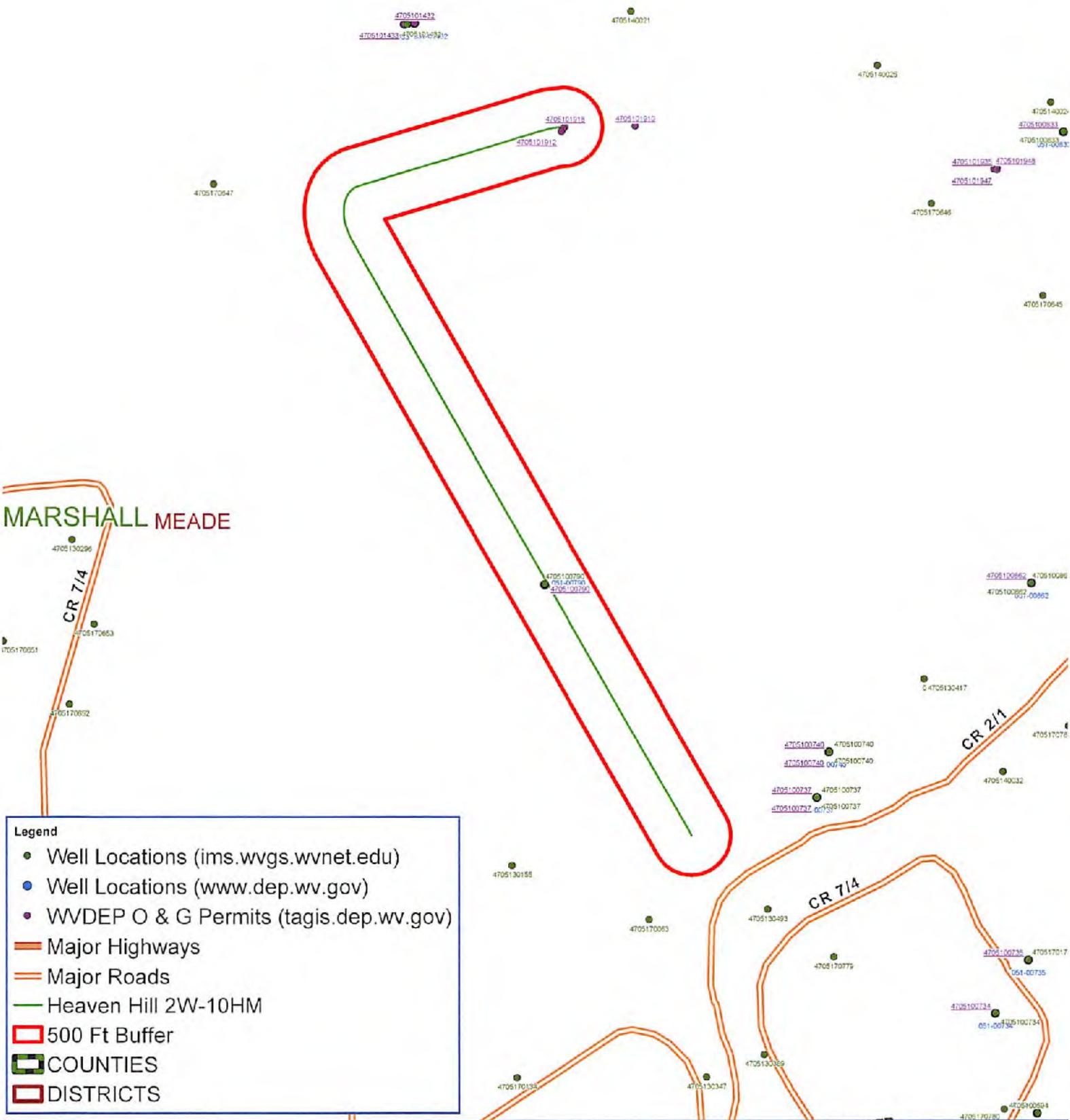
Plugging Information:

API	PLG_DT	DEPTH_FBT
4725102790	3/29/1994	0

There is no Sample data for this well

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5.11. Area of Review-- The permittee shall review the area surrounding the proposed well pad so as to identify and evaluate potential conduits for unintended fracture propagation, a report of which the permittee shall provide to the Office with the application for well work. All existing active, plugged, abandoned, and undocumented wells within a five hundred feet (500') radius of the surface location of the well that is the subject of the new application and within a five hundred feet (500') radius of the lateral section of the wellbore shall be considered for the potential of unintended fracture propagation. The report shall detail those wells that are known or reasonably expected to penetrate a depth that could be within the range of the fracture propagation. The detail shall include at a minimum the API number, operator name, total depth, perforated formation(s) and producing zones not perforated.



Legend

- Well Locations (ims.wvgs.wvnet.edu)
- Well Locations (www.dep.wv.gov)
- WVDEP O & G Permits (tagis.dep.wv.gov)
- Major Highways
- Major Roads
- Heaven Hill 2W-10HM
- 500 Ft Buffer
- COUNTIES
- DISTRICTS



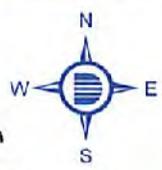
Heaven Hill 2W-10HM Meade District Marshall County, WV



Map Created: July 24, 2017
Map Current As Of: July 24, 2017

Notes:
All locations are approximate and are for visualization purposes only.

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Map Prepared by:
DPS
09/22/2017
LAND SERVICES

WW-9
(4/16)

API Number 47 - 051 - 01955
Operator's Well No. Heaven Hill 2W-10HM

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

Watershed (HUC 10) Fish Creek Quadrangle Glen Easton 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 containment

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 [Signature]
Company Official (Typed Name) Sean Gasser
Company Official Title Engineer

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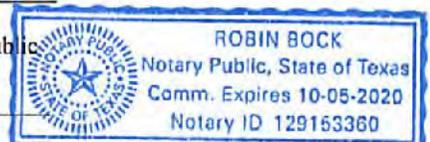
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Subscribed and sworn before me this 1st day of August, 2017

Robin Bock

Notary Public



My commission expires 10-05-2020

09/22/2017

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 32.98 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

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Seed Mixtures

Temporary		Permanent	
Seed Type	lbs/acre	Seed Type	lbs/acre
Annual Ryegrass	40	Orchard Grass	10
		Ladino Clover	3

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: Jim Nicholson

Comments: _____

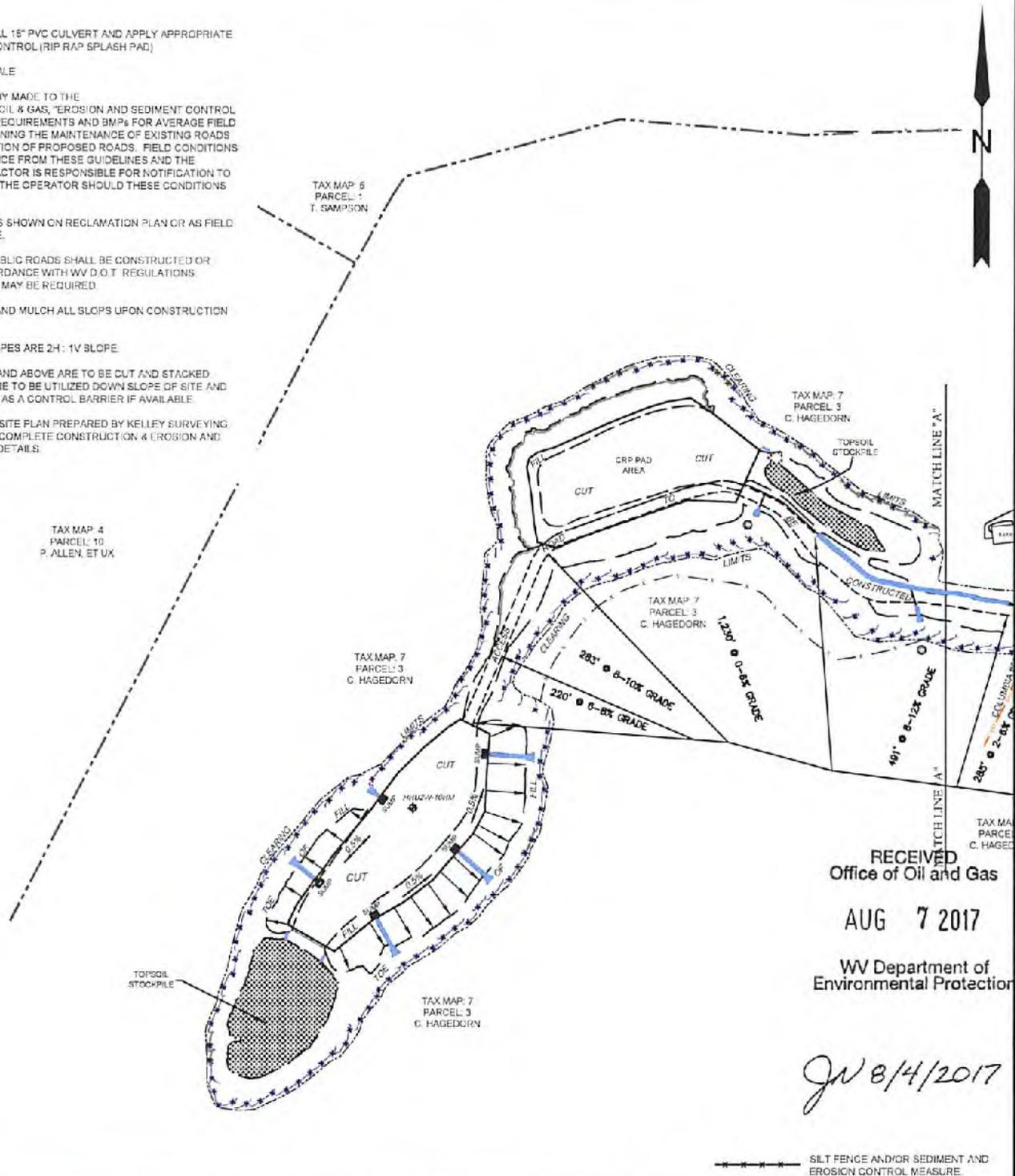
Title: DEP Inspector Date: 8/4/2017

Field Reviewed? Yes No

PROPOSED HEAVEN HILL 2W - 10HM

NOTES:

1. - DENOTES INSTALL 18" PVC CULVERT AND APPLY APPROPRIATE SEDIMENT OUTLET CONTROL (RIP RAP SPLASH PAD)
2. DRAWING NOT TO SCALE
3. 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.
4. INST. ALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.
5. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
6. TEMPORARILY SEED AND MULCH ALL SLOPS UPON CONSTRUCTION OF LOCATION.
7. ALL CUT AND FILL SLOPES ARE 2H: 1V SLOPE.
8. ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED BRUSH SLASHINGS ARE TO BE UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.
9. SEE HEAVEN HILL 2W SITE PLAN PREPARED BY KELLEY SURVEYING DATED 4/27/2017 FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.



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JN 8/4/2017

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www.slsurvey.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR: TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317	
COUNTY	DISTRICT	DATE	SCALE
MARSHALL	MEADE	07/27/2017	NONE
DRAWN BY	JOB NO.		
K.G.M.	8703		

TUG HILL
OPERATING

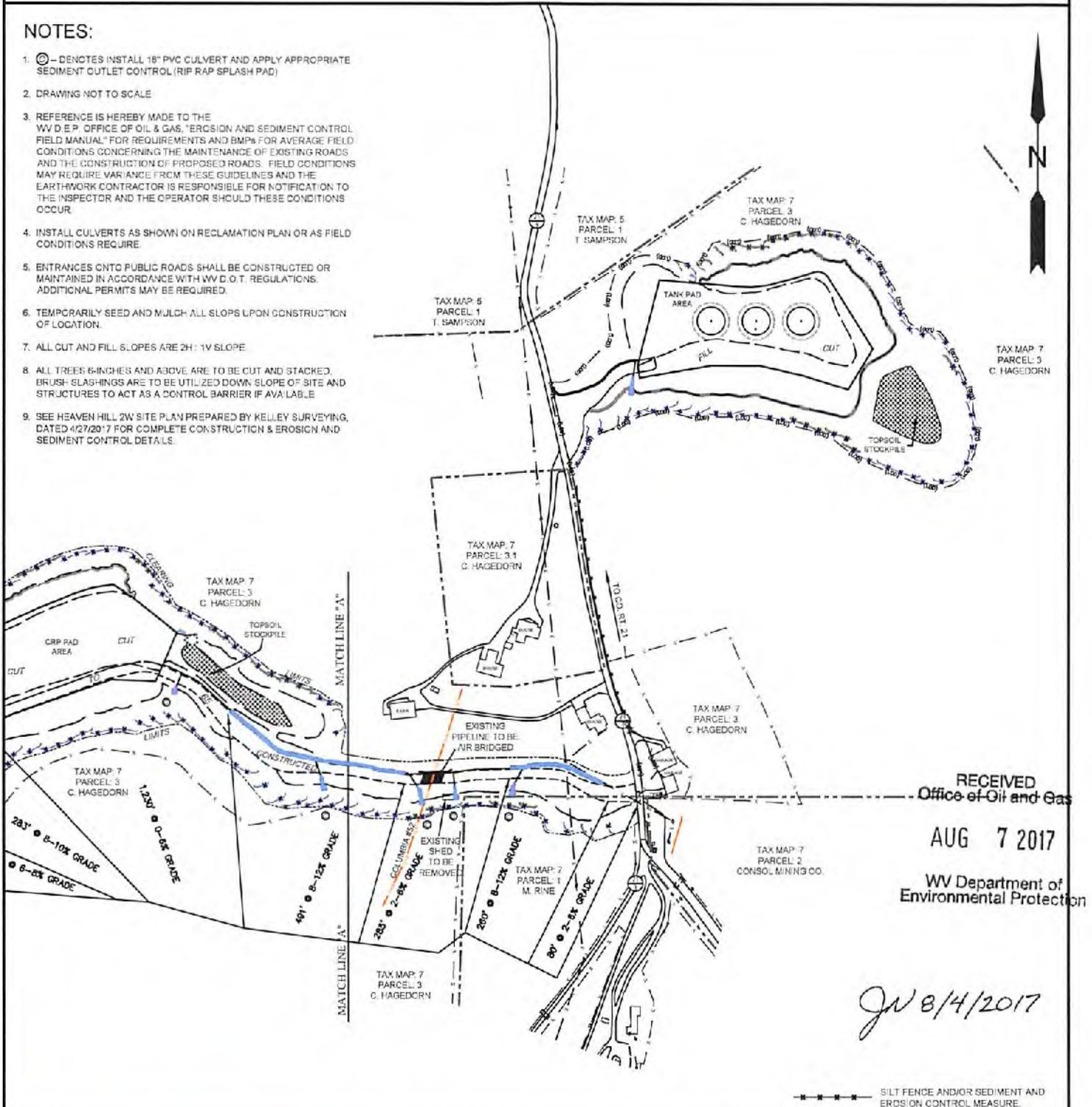
09/22/2017

SL-01955

PROPOSED HEAVEN HILL 2W - 10HM

NOTES:

1. - DENOTES INSTALL 18" PVC CULVERT AND APPLY APPROPRIATE SEDIMENT OUTLET CONTROL (RIP RAP SPLASH PAD)
2. DRAWING NOT TO SCALE
3. 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.
4. INSTALL CULVERTS AS SHOWN ON RECLAMATION PLAN OR AS FIELD CONDITIONS REQUIRE.
5. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
6. TEMPORARILY SEED AND MULCH ALL SLOPS UPON CONSTRUCTION OF LOCATION.
7. ALL CUT AND FILL SLOPES ARE 2H:1V SLOPE
8. ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH-SLASHINGS ARE TO BE UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.
9. SEE HEAVEN HILL 2W SITE PLAN PREPARED BY KELLEY SURVEYING, DATED 4/27/2017 FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.



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WV Department of
Environmental Protection

JN 8/4/2017

SLS
Land & Energy Development
Solutions from the ground up.
P.O. Box 150 #12 Vanhorn Drive • Glenville, WV 26351 • (304) 462-5634
www.slsurvey.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8703	07/27/2017	NONE

TUG HILL
OPERATING

09/22/2017

51-01955



Well Site Safety Plan
Tug Hill Operating, LLC

juw
8/4/17

Well Name: Heaven Hill Unit 2W-10HM

Pad Name: Heaven Hill Unit 2 Marshall

County, West Virginia

UTM (meters), NAD83, Zone 17:

Northing: 4,406,723.16

Easting: 524,572.15

August 2017

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Office of Oil and Gas

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WV Department of
Environmental Protection

09/22/2017

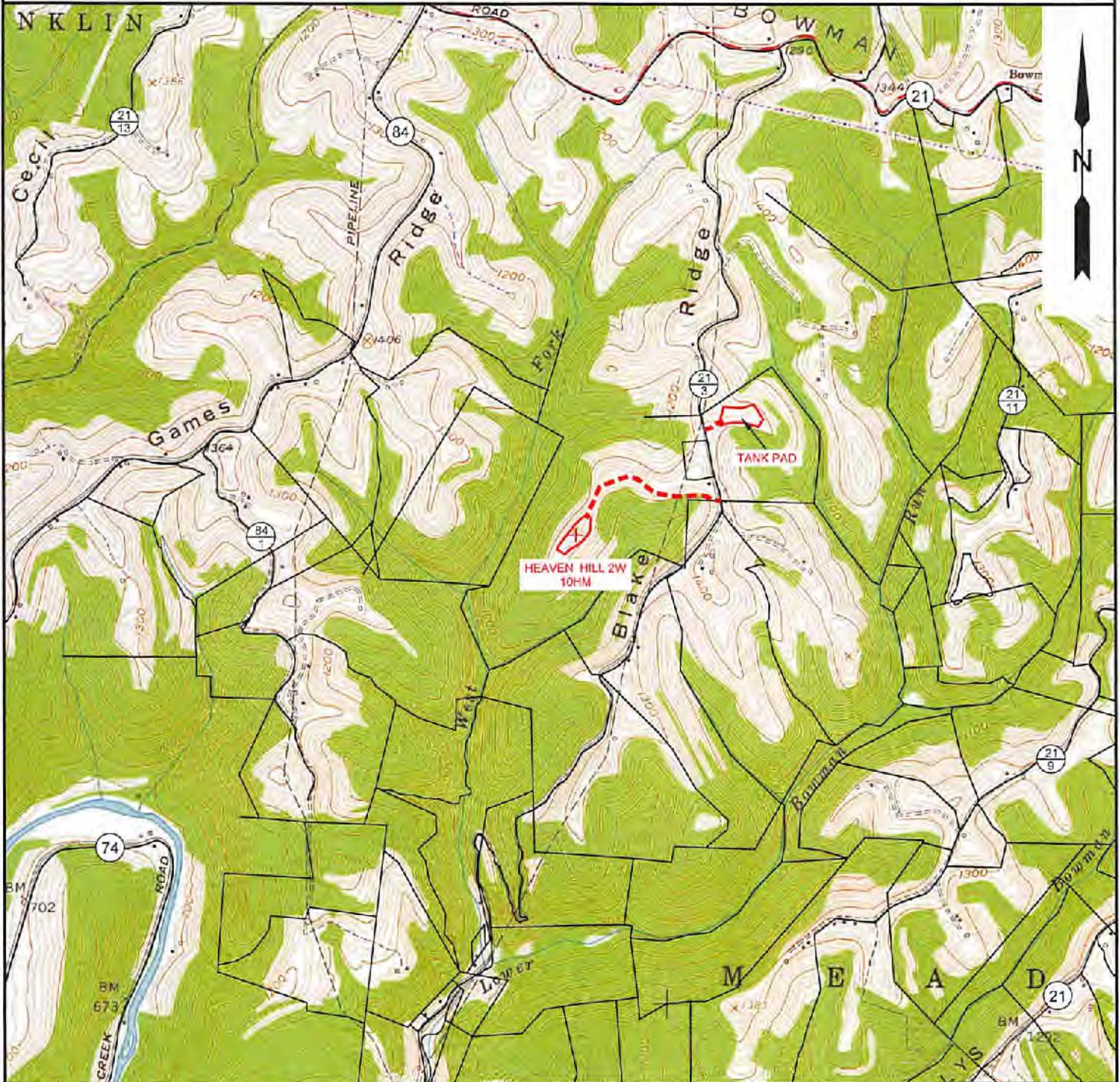
WW-9

PROPOSED
HEAVEN HILL 2W - 10HM

AUG 7 2017

SUPPLEMENT PG. 2

WV Department of
Environmental Protection



NOTE: CLOSEST WATER PURVEYOR
GRANDVIEW - DOOLIN PUBLIC SERVICE DISTRICT
PROCTOR, WV

LAT: 39.7137712
LON: -80.8258327
LOCATED: S 42°57'59" W AT 47,250' FROM HEAVEN HILL 2W - 10HM SURFACE LOCATION

JN 8/4/2017

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www.slsurveyors.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8703	07/27/2017	1" = 2000'

TUG HILL
OPERATING

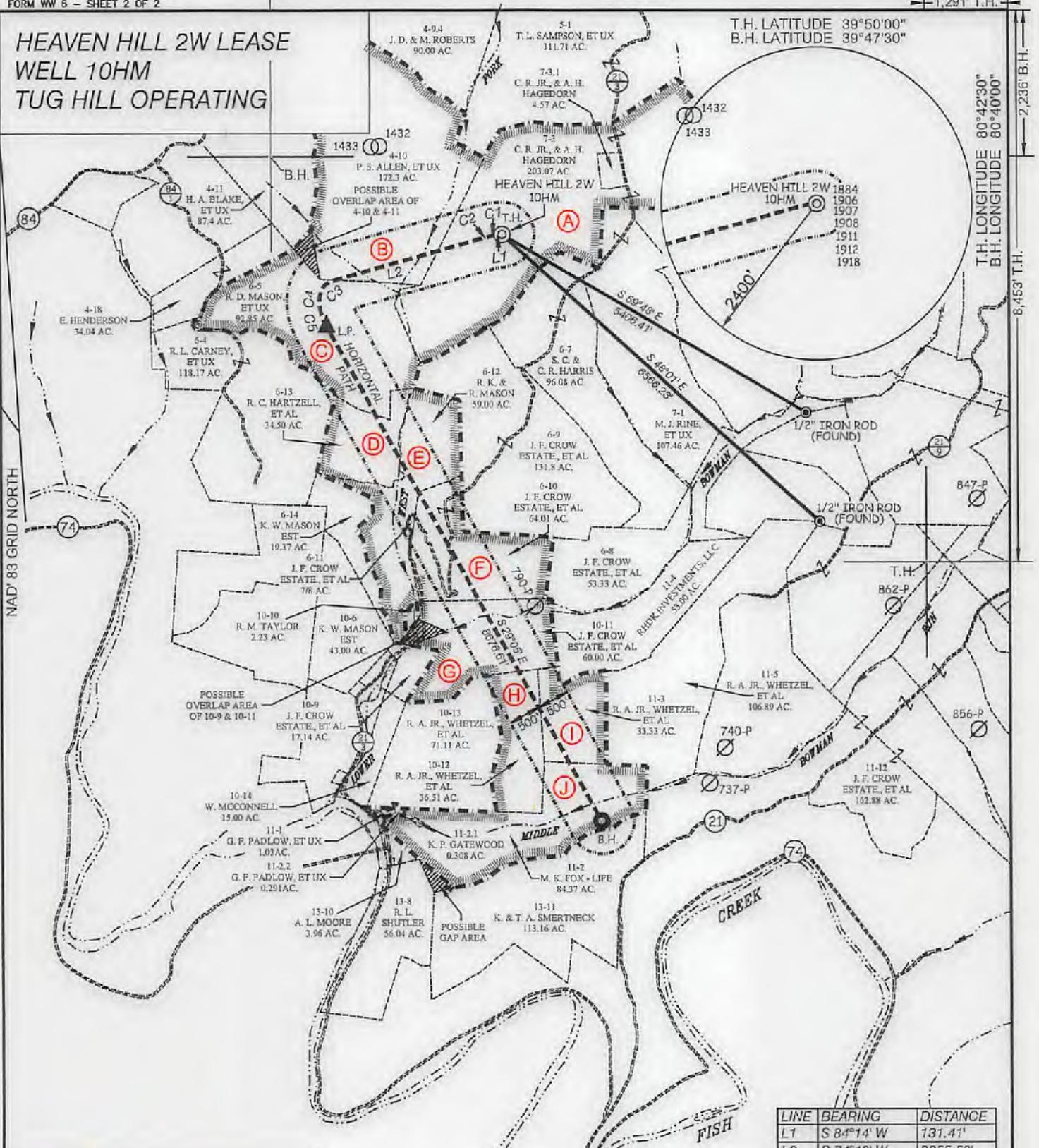
09/22/2017

**HEAVEN HILL 2W LEASE
WELL 10HM
TUG HILL OPERATING**

T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°47'30"

T.H. LONGITUDE 80°42'30"
B.H. LONGITUDE 80°40'00"
2,236' B.H.
8,453' T.H.

NAD'83 GRID NORTH



LINE	BEARING	DISTANCE
L1	S 84°14' W	131.41'
L2	S 74°18' W	2355.59'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	25.51'	284.16'	S 79°28' W	25.51'
C2	209.32'	5009.3'	S 75°08' W	209.3'
C3	205.56'	245.14'	S 49°48' W	199.59'
C4	327.66'	507.28'	S 06°02' W	321.98'
C5	257.6'	872.22'	S 20°34' E	256.66'

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Solutions from the ground up.
P.O. Box 150 | 12 Vantom Drive | Glenville, WV 26031 | (304) 462-9634
www.slsurveys.com

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD'83 S.P.C. (FT) N. 478,490.46 E. 1,627,771.85
 NAD'83 GEO. LAT-(N) 39.910129 LONG-(W) 80.712923
 NAD'83 UTM (M) N. 4,406,723.15 E. 524,572.15

LANDING POINT
 NAD'83 S.P.C. (FT) N. 478,061.3 E. 1,625,055.8
 NAD'83 GEO. LAT-(N) 39.806187 LONG-(W) 80.722528
 NAD'83 UTM (M) N. 4,406,283.1 E. 523,751.8

BOTTOM HOLE
 NAD'83 S.P.C. (FT) N. 470,508.7 E. 1,629,273.2
 NAD'83 GEO. LAT-(N) 39.765529 LONG-(W) 80.707155
 NAD'83 UTM (M) N. 4,403,964.4 E. 525,075.2



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

LEGEND

- LEASE LINE
- SURFACE LINE
- WELL LATERAL
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- TAX MAP-PARCEL
- LEASE # (SEE PAGE 1)

SCALE 1" = 2000' FILE NO. 3703P10HM.dwg
 DATE JULY 27, 2017
 REVISED _____, 20____
 OPERATORS WELL NO. HEAVEN HILL 2W-10HM
 API WELL NO. 47-051-01955464
 NO. STATE COUNTY PERMIT

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

DIANNA STAMPER
 CT CORPORATION SYSTEM
 ADDRESS 5400 D BIG TYLER ROAD
 CHARLESTON, WV 25313

WELL OPERATOR TUG HILL OPERATING, LLC
 ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500
 FORT WORTH, TX 76107

09/22/2017

COUNTY NAME PERMIT

**HEAVEN HILL 2W LEASE
WELL 10HM
TUG HILL OPERATING**

T.H. LATITUDE 39°50'00"
B.H. LATITUDE 39°47'30"

B.H.

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'83 S.P.C. (FT) N. 479,480.49 E. 1,627,771.95
NAD'83 GEO. LAT-(N) 39.810129 LONG-(W) 80.712928
NAD'83 UTM (M) N. 4,406,283.1 E. 524,572.15

LANDING POINT

NAD'83 S.P.C. (FT) N. 478,091.3 E. 1,625,055.8
NAD'83 GEO. LAT-(N) 39.806187 LONG-(W) 80.722528
NAD'83 UTM (M) N. 4,403,751.8 E. 523,751.8

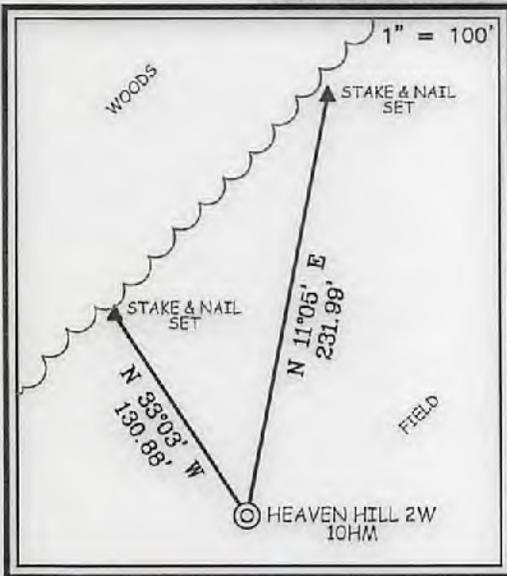
BOTTOM HOLE

NAD'83 S.P.C. (FT) N. 470,508.7 E. 1,629,273.2
NAD'83 GEO. LAT-(N) 39.785529 LONG-(W) 80.707155
NAD'83 UTM (M) N. 4,403,994.4 E. 525,075.2

NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 525' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'

REFERENCES



No.	Lease Name or No.	Tag	Parcel	Grantor, Lessor, etc.	Acres/Book/Page
1	10*15531	A	6-7-3	VENANGO 21ST CENTURY ENERGY INC	722 281
2	10*15568	A	6-7-3	CHARLES R HAGEDORN JR	816 475
3	10*47051.023.1	A	6-7-3	VENANGO 21ST CENTURY ENERGY INC	808 638
4	10*47051.023.2	A	6-7-3	PATRIOT RESTORATIONS LLC	836 541
5	10*47051.023.3	A	6-7-3	TRIENERGY HOLDINGS, LLC	878 330
6	10*15526	B	6-7-30	STEPHEN MENENDEZ	918 86
7	10*15661	C	6-6-5	CHESTNUT HOLDINGS LLC	899 170
8	10*15507	D	6-6-13	RAY C. HARTZEL AND CAROL J. HARTZEL, HUSBAND AND WIFE	889 152
9	10*15535	E	6-6-12	RONALD KEITH MARSON ETUX	722 445
10	10*15541	E	6-6-12	MARY ALTHI FROH WAPTEL	781 332
11	10*15542	E	6-6-12	KENNETH D SIBURT	783 228
12	10*15543	E	6-6-12	SANDRA FROWEN	781 327
13	10*15544	E	6-6-12	WICKY CHERRY A/K/A WICKIE L CHERRY	788 338
14	10*15545	E	6-6-12	JAMES B SIBURT ET UX	794 397
15	10*15546	E	6-6-12	ALAN K SIBURT ET UX	793 325
16	10*15547	E	6-6-12	RODNEY L SIBURT	793 346
17	10*15530	F	6-6-30	BLAINE PHELPS ET VIR	718 326
18	10*15531	F	6-6-30	DAVID E CROW	718 326
19	10*15532	F	6-6-30	FRANCES COFFEY	718 328
20	10*15533	F	6-6-30	KAY KEYS	718 330
21	10*15534	F	6-6-30	PAUL CROW	718 336
22	10*15535	F	6-6-30	ROBERT L CROW	718 334
23	10*15536	F	6-6-30	ROSE MARIE WIELCZEWSKI	718 354
24	10*15537	F	6-6-30	DIANNE GELLNER & GARY GELLNER	718 345
25	10*15538	F	6-6-30	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	718 347
26	10*15539	F	6-6-30	JOHN CROW	726 580
27	10*15540	F	6-6-30	TIMOTHY CROW	726 582
28	10*47051.123.1	F	6-6-30	LLOYD SBAKER	865 389
29	10*47051.123.2	F	6-6-30	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	873 343
30	10*15530	G	6-6-11	BLAINE PHELPS ET VIR	718 326
31	10*15531	G	6-6-11	DAVID E CROW	718 326
32	10*15532	G	6-6-11	FRANCES COFFEY	718 328
33	10*15533	G	6-6-11	KAY KEYS	718 330
34	10*15534	G	6-6-11	PAUL CROW	718 336
35	10*15535	G	6-6-11	ROBERT L CROW	718 334
36	10*15536	G	6-6-11	ROSE MARIE WIELCZEWSKI	718 354
37	10*15537	G	6-6-11	DIANNE GELLNER & GARY GELLNER	718 345
38	10*15538	G	6-6-11	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	718 347
39	10*15539	G	6-6-11	JOHN CROW	726 580
40	10*15540	G	6-6-11	TIMOTHY CROW	726 582
41	10*47051.123.1	G	6-6-11	LLOYD SBAKER	865 389
42	10*47051.123.2	G	6-6-11	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	873 343
43	10*15573	H	6-6-12	WICKIE MARSON	620 405
44	10*15574	H	6-6-12	MARY A SOUTH	621 414
45	10*15575	H	6-6-12	MARK L WHITZEL	623 73
46	10*15576	H	6-6-12	RAY A WHITZEL JR	623 62
47	10*15577	H	6-6-12	ROBERT L WHITZEL	623 526
48	10*15578	H	6-6-12	SHARON L WHITZEL	623 540
49	10*15579	H	6-6-12	JAMES BOHN IV BRIGGS	901 535
50	10*15575	H	6-6-12	ROGER JACOB BRIGGS	901 518
51	10*15576	H	6-6-12	JOHN DEAN BRIGGS AND PATTY KAY BRIGGS	901 523
52	10*16209	H	6-10-12	LORI ASTON DIXON	904 565
53	10*16236	H	6-10-12	FRANCIS YRIGLE	907 155
54	10*16237	H	6-10-12	GREGORY J ASTON AND TAMMY E ASTON	907 149
55	10*16275	H	6-10-12	JEFFREY A ASTON	907 159
56	10*47051.108.1	H	6-10-12	MICHAEL A WHITZEL	885 51
57	10*47051.108.2	H	6-10-12	PATRICIA ANN MCCOUGAL	901 505
58	10*47051.108.3	H	6-10-12	STEVEN J ASTON	901 308
59	10*47051.108.30	H	6-10-12	FRED J BELNS	901 298
60	10*47051.108.36	H	6-10-12	WYCHINE ROBERT	901 282
61	10*47051.108.37	H	6-10-12	CARLE ASTON	901 304
62	10*47051.108.38	H	6-10-12	CAROLYN SUE WELLS	901 312
63	10*47051.108.41	H	6-10-12	ELMER ASTON	901 296
64	10*47051.108.46	H	6-10-12	WILLIAM ASTON	901 312
65	10*47051.108.5	H	6-10-12	BRENDA J WHITZEL	885 55
66	10*47051.108.50	H	6-10-12	DAVID J ASTON ESTATE BY EXECUTOR DAWN R MARKS	901 314
67	10*47051.108.52	H	6-10-12	CORRIE ASTON	901 315
68	10*47051.108.53	H	6-10-12	MARY MAE EYLL	901 339
69	10*47051.108.56	H	6-10-12	PAULA HUNDE	901 347
70	10*47051.108.57	H	6-10-12	ROBERT B KERNS	901 346
71	10*47051.108.58	H	6-10-12	RONALD W KERNS	901 341
72	10*47051.108.59	H	6-10-12	PAUL LEYSER BEENS ESTATE SALVATORE P PUGLISI, EXECUTOR	901 345
73	10*47051.108.6	H	6-10-12	TERRI MCCARDLE	895 23
74	10*47051.108.63	H	6-10-12	MARANDA SIGH	901 275
75	10*47051.108.7	H	6-10-12	GARY FRANCIS WHITZEL	895 24
76	10*47051.108.23	H	6-10-12	JOHN ASTON JR	901 351
77	10*47051.108.27	H	6-10-12	SHONCA WOOD	901 356
78	10*47051.108.28	H	6-10-12	DONNA WOODS MOODY	901 354
79	10*47051.108.29	H	6-10-12	MARK A ASTON	901 358
80	10*47051.108.43	H	6-10-12	KENNETH CHEPPS	899 20
81	10*15561	I	6-11-8	VICKIE MASON	682 418
82	10*15562	I	6-11-8	MARY A SOUTH	682 281
83	10*15563	I	6-11-8	MARK L WHITZEL	682 544
84	10*15564	I	6-11-8	RAY A WHITZEL JR	682 548
85	10*15565	I	6-11-8	ROBERT L WHITZEL	682 522
86	10*15566	I	6-11-8	SHARON L WHITZEL	682 526
87	10*47051.108.1	I	6-11-8	MICHAEL A WHITZEL	885 51
88	10*47051.108.5	I	6-11-8	BRENDA J WHITZEL	885 55
89	10*47051.108.6	I	6-11-8	TERRI MCCARDLE	895 23
90	10*47051.108.7	I	6-11-8	GARY FRANCIS WHITZEL	895 24
91	10*47051.243.1	J	6-13-2	MARY A FOX	879 352
92	10*47051.243.2	J	6-13-2	PAUL G FOX	879 353
93	10*47051.243.3	J	6-13-2	MARK H FOX	879 358
94	10*47051.243.4	J	6-13-2	DAVID E FOX	875 55
95	10*47051.243.5	J	6-13-2	MURIS T FOX	875 58
96	10*47051.243.6	J	6-13-2	THOMAS FOX	875 63

ju
8/4/17

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

P.S. 677 *Gregory A. Smith*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE JULY 27, 20 17
 REVISED _____, 20 _____
 OPERATORS WELL NO. HEAVEN HILL 2W-10HM
 API WELL NO. 47-051-01955
 STATE WV COUNTY MARSHALL PERMIT HGA 01955

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8703P10HM.dwg
 HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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

WELL TYPE: OIL _____ GAS X INJECTION _____ WASTE DISPOSAL _____ IF "GAS" PRODUCTION X STORAGE _____ DEEP _____ SHALLOW X
 LOCATION: GROUND = 1,350.0' ELEVATION PROPOSED = 1,331.26' WATERSHED WEST FORK OF LOWER BOWMAN RUN OF FISH CREEK (HUC 10)
 DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'
 SURFACE OWNER C.R. JR. & A.H. HAGEDORN ACREAGE 203.07±
 ROYALTY OWNER C.R. JR. & A.H. HAGEDORN ET AL (SEE ABOVE) ACREAGE 203.07±
 PROPOSED WORK: LEASE NO. SEE ABOVE **09/22/2017**
 DRILL X CONVERT _____ DRILL DEEPER _____ REDRILL _____ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION _____ PERFORATE NEW FORMATION _____ PLUG AND ABANDON _____ CLEAN OUT AND REPLUG _____ OTHER _____
 PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
 ESTIMATED DEPTH TVD: 6,879' / TMD: 16,799'

WELL OPERATOR TUG HILL OPERATING, LLC DESIGNATED AGENT DIANNA STAMPER
 ADDRESS 1320 SOUTH UNIVERSITY DRIVE, SUITE 500 ADDRESS 5400 D BIG TYLER ROAD
 FORT WORTH, TX 76107 CHARLESTON, WV 25313

T.H. LONGITUDE 80°42'30"
B.H. LONGITUDE 80°40'00"
2,286' B.H.

T.H.

COUNTY NAME PERMIT

**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

RECEIVED
Office of Oil and Gas

AUG 7 2017

WV Department of
Environmental Protection

**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 *Amy Miller*
 Its: Permitting Specialist - Appalachia

Lease Name or N	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*15521	A	9-7-3	VENANGO 21ST CENTURY ENERGY INC	TRIENERGY HOLDINGS, LLC	1/8+	722 281	TriEnergy to NPAR: 24/196	NPAR to Chevron: 756/332	Chevron to Tug Hill: 36/148
10*15608	A	9-7-3	CHARLES R HAGEDORN JR	CHEVRON U.S.A. INC.	1/8+	816 423	N/A	N/A	Chevron to Tug Hill: 36/148
10*47051.073.1	A	9-7-3	VENANGO 21ST CENTURY ENERGY INC	TH EXPLORATION LLC	1/8+	888 618	N/A	N/A	N/A
10*47051.073.2	A	9-7-3	PATRIOT RESTORATIONS LLC	TH EXPLORATION LLC	1/8+	908 541	N/A	N/A	N/A
10*47051.073.3	A	9-7-3	TRIENERGY HOLDINGS, LLC	TH EXPLORATION LLC	1/8+	878 330	N/A	N/A	N/A
10*17229	B	9-4-10	STEPHEN MENENDEZ	TH EXPLORATION LLC	1/8+	913 66	N/A	N/A	N/A
10*15661	C	9-6-5	CHESTNUT HOLDINGS LLC	REPUBLIC ENERGY VENTURES LLC	1/8+	839 170	N/A	Republic to Chevron: 32/415	Chevron to Tug Hill: 36/148
10*15507	D	9-6-13	RAY C. HARTZELL AND CAROL J. HARTZELL, HUSBAND	AB RESOURCES LLC	1/8+	689 162	AB Res. to Chief: 24/382	Chief to Chevron: 25/1	Chevron to Tug Hill: 36/148
10*15525	E	9-6-12	RONALD KEITH MASON ET UX	CHEVRON U.S.A. INC.	1/8+	772 445	N/A	N/A	Chevron to Tug Hill: 36/148
10*15541	E	9-6-12	MARY RUTH FROHNAPFEL	CHEVRON U.S.A. INC.	1/8+	781 312	N/A	N/A	Chevron to Tug Hill: 36/148
10*15542	E	9-6-12	KENNETH D SIBURT	CHEVRON U.S.A. INC.	1/8+	781 218	N/A	N/A	Chevron to Tug Hill: 36/148
10*15543	E	9-6-12	SANDRA FROWEN	CHEVRON U.S.A. INC.	1/8+	781 307	N/A	N/A	Chevron to Tug Hill: 36/148
10*15544	E	9-6-12	VICKI J CHERRY A/K/A VICKIE L CHERRY	CHEVRON U.S.A. INC.	1/8+	793 318	N/A	N/A	Chevron to Tug Hill: 36/148
10*15545	E	9-6-12	JAMES B SIBURT ET UX	CHEVRON U.S.A. INC.	1/8+	793 332	N/A	N/A	Chevron to Tug Hill: 36/148
10*15546	E	9-6-12	ALAN K SIBURT ET UX	CHEVRON U.S.A. INC.	1/8+	793 325	N/A	N/A	Chevron to Tug Hill: 36/148
10*15547	E	9-6-12	RODNEY L SIBURT	CHEVRON U.S.A. INC.	1/8+	793 346	N/A	N/A	Chevron to Tug Hill: 36/148
10*15510	F	9-6-10	ELAINE PHELPS ET VIR	TRIENERGY HOLDINGS LLC	1/8+	718 326	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15511	F	9-6-10	DAVID E CROW	TRIENERGY HOLDINGS LLC	1/8+	718 376	TriEnergy to NPAR: 25/463	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15512	F	9-6-10	FRANCES COFFEY	TRIENERGY HOLDINGS LLC	1/8+	718 378	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15513	F	9-6-10	KAY KEYES	TRIENERGY HOLDINGS LLC	1/8+	718 330	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15514	F	9-6-10	L PAUL CROW	TRIENERGY HOLDINGS LLC	1/8+	718 336	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15515	F	9-6-10	DESIRE L CROW	TRIENERGY HOLDINGS LLC	1/8+	718 334	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15516	F	9-6-10	ROSE MARIE KIELGCZEWSKI	TRIENERGY HOLDINGS LLC	1/8+	718 354	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15517	F	9-6-10	DIANNE GELLNER & GARY GELLNER	TRIENERGY HOLDINGS LLC	1/8+	718 345	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15518	F	9-6-10	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TRIENERGY HOLDINGS LLC	1/8+	718 347	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15519	F	9-6-10	JOHN CROW	TRIENERGY HOLDINGS LLC	1/8+	726 580	TriEnergy to NPAR: 25/449	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15520	F	9-6-10	TIMOTHY CROW	TRIENERGY HOLDINGS LLC	1/8+	726 582	TriEnergy to NPAR: 25/449	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*47051.123.1	F	9-6-10	LLOYD G BAKER	TH EXPLORATION LLC	1/8+	865 389	N/A	N/A	N/A
10*47051.123.2	F	9-6-10	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TH EXPLORATION LLC	1/8+	873 143	N/A	N/A	N/A
10*15510	G	9-10-11	ELAINE PHELPS ET VIR	TRIENERGY HOLDINGS LLC	1/8+	718 326	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15511	G	9-10-11	DAVID E CROW	TRIENERGY HOLDINGS LLC	1/8+	718 376	TriEnergy to NPAR: 25/463	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15512	G	9-10-11	FRANCES COFFEY	TRIENERGY HOLDINGS LLC	1/8+	718 378	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15513	G	9-10-11	KAY KEYES	TRIENERGY HOLDINGS LLC	1/8+	718 330	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15514	G	9-10-11	L PAUL CROW	TRIENERGY HOLDINGS LLC	1/8+	718 336	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15515	G	9-10-11	DESIRE L CROW	TRIENERGY HOLDINGS LLC	1/8+	718 334	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15516	G	9-10-11	ROSE MARIE KIELGCZEWSKI	TRIENERGY HOLDINGS LLC	1/8+	718 354	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15517	G	9-10-11	DIANNE GELLNER & GARY GELLNER	TRIENERGY HOLDINGS LLC	1/8+	718 345	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15518	G	9-10-11	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TRIENERGY HOLDINGS LLC	1/8+	718 347	TriEnergy to NPAR: 24/430	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15519	G	9-10-11	JOHN CROW	TRIENERGY HOLDINGS LLC	1/8+	726 580	TriEnergy to NPAR: 25/449	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*15520	G	9-10-11	TIMOTHY CROW	TRIENERGY HOLDINGS LLC	1/8+	726 582	TriEnergy to NPAR: 25/449	NPAR to Chevron: 28/356	Chevron to Tug Hill: 36/148
10*47051.123.1	G	9-10-11	LLOYD G BAKER	TH EXPLORATION LLC	1/8+	865 389	N/A	N/A	N/A
10*47051.123.2	G	9-10-11	JAMES P HOLLIDAY AND JACQUELINE HOLLIDAY	TH EXPLORATION LLC	1/8+	873 143	N/A	N/A	N/A
10*15573	H	9-10-12	VICKIE MASON	CHEVRON U.S.A. INC.	1/8+	680 405	N/A	N/A	Chevron to Tug Hill: 36/148
10*15574	H	9-10-12	MARY A SOUTH	CHESAPEAKE APPALACHIA LLC	1/8+	681 414	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15575	H	9-10-12	MARK L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	683 73	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15576	H	9-10-12	RAY A WHETZAL JR	CHESAPEAKE APPALACHIA LLC	1/8+	683 69	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15577	H	9-10-12	ROBERT L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	682 536	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15578	H	9-10-12	SHARON L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	682 540	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15724	H	9-10-12	JAMES RODNEY BRIGGS	TH EXPLORATION LLC	1/8+	901 325	N/A	N/A	N/A
10*15725	H	9-10-12	ROGER JACOB BRIGGS	TH EXPLORATION LLC	1/8+	901 318	N/A	N/A	N/A
10*15726	H	9-10-12	JOHN DEAN BRIGGS AND PATTY KAY BRIGGS	TH EXPLORATION LLC	1/8+	901 321	N/A	N/A	N/A

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WW-6A1 Supplement

Operator's Well No. Heaven Hill 2W - 10HM

Lease Name or N	Tag	Parcel	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Deed Book/Page	Assignment	Assignment	Assignment
10*16079	H	9-10-12	LORI ASTON DIXON	TH EXPLORATION LLC	1/8+	904 565	N/A	N/A	N/A
10*16236	H	9-10-12	FRANCIS Y RIGGLE	TH EXPLORATION LLC	1/8+	907 156	N/A	N/A	N/A
10*16237	H	9-10-12	GREGORY J ASTON AND TAMMY E ASTON	TH EXPLORATION LLC	1/8+	907 149	N/A	N/A	N/A
10*16275	H	9-10-12	JEFFREY A ASTON	TH EXPLORATION LLC	1/8+	907 153	N/A	N/A	N/A
10*47051.108.1	H	9-10-12	MICHAEL A WHETZEL	TH EXPLORATION LLC	1/8+	885 51	N/A	N/A	N/A
10*47051.108.29	H	9-10-12	PATRICIA ANN MCDUGAL	TH EXPLORATION LLC	1/8+	901 306	N/A	N/A	N/A
10*47051.108.30	H	9-10-12	STEVEN L ASTON	TH EXPLORATION LLC	1/8+	901 308	N/A	N/A	N/A
10*47051.108.31	H	9-10-12	FRED T KERNS	TH EXPLORATION LLC	1/8+	901 298	N/A	N/A	N/A
10*47051.108.36	H	9-10-12	YVONNE K BOGERT	TH EXPLORATION LLC	1/8+	901 300	N/A	N/A	N/A
10*47051.108.37	H	9-10-12	CARL E ASTON	TH EXPLORATION LLC	1/8+	901 304	N/A	N/A	N/A
10*47051.108.38	H	9-10-12	CAROLYN SUE WELLS	TH EXPLORATION LLC	1/8+	901 310	N/A	N/A	N/A
10*47051.108.41	H	9-10-12	ELMER ASTON	TH EXPLORATION LLC	1/8+	901 296	N/A	N/A	N/A
10*47051.108.48	H	9-10-12	WILLIAM ASTON	TH EXPLORATION LLC	1/8+	901 312	N/A	N/A	N/A
10*47051.108.5	H	9-10-12	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	885 55	N/A	N/A	N/A
10*47051.108.50	H	9-10-12	DAVID U ASTON ESTATE BY EXECUTOR DAWN R MAR	TH EXPLORATION LLC	1/8+	901 314	N/A	N/A	N/A
10*47051.108.52	H	9-10-12	CONNIE N ASTON	TH EXPLORATION LLC	1/8+	901 316	N/A	N/A	N/A
10*47051.108.53	H	9-10-12	MARY JANE KYLE	TH EXPLORATION LLC	1/8+	901 339	N/A	N/A	N/A
10*47051.108.56	H	9-10-12	PAULA HUNDL	TH EXPLORATION LLC	1/8+	901 347	N/A	N/A	N/A
10*47051.108.57	H	9-10-12	ROBERT B KERNS	TH EXPLORATION LLC	1/8+	901 349	N/A	N/A	N/A
10*47051.108.58	H	9-10-12	RONALD W KERNS	TH EXPLORATION LLC	1/8+	901 341	N/A	N/A	N/A
10*47051.108.59	H	9-10-12	PAUL ULYSSES KERNS ESTATE SALVATORE P PUGLISI, I	TH EXPLORATION LLC	1/8+	901 343	N/A	N/A	N/A
10*47051.108.6	H	9-10-12	TERRI MCCARDLE	TH EXPLORATION LLC	1/8+	895 23	N/A	N/A	N/A
10*47051.108.61	H	9-10-12	AMANDA FEIGH	TH EXPLORATION LLC	1/8+	901 345	N/A	N/A	N/A
10*47051.108.7	H	9-10-12	GARY FRANCIS WHETZAL	TH EXPLORATION LLC	1/8+	895 26	N/A	N/A	N/A
10*47051.108.73	H	9-10-12	JOHN ASTON JR	TH EXPLORATION LLC	1/8+	901 351	N/A	N/A	N/A
10*47051.108.77	H	9-10-12	SHONDA WOOD	TH EXPLORATION LLC	1/8+	901 356	N/A	N/A	N/A
10*47051.108.78	H	9-10-12	DONNA WOODS MOODY	TH EXPLORATION LLC	1/8+	901 354	N/A	N/A	N/A
10*47051.108.79	H	9-10-12	MARK A ASTON	TH EXPLORATION LLC	1/8+	901 358	N/A	N/A	N/A
10*47051.108.M:	H	9-10-12	KENNETH CHIPPS	TH EXPLORATION LLC	1/8+	899 20	N/A	N/A	N/A
10*15561	I	9-11-3	VICKIE MASON	CHESAPEAKE APPALACHIA LLC	1/8+	680 413	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15562	I	9-11-3	MARY A SOUTH	CHEVRON U.S.A. INC.	1/8+	682 231	N/A	N/A	Chevron to Tug Hill: 36/148
10*15563	I	9-11-3	MARK L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	682 544	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15564	I	9-11-3	RAY A WHETZAL JR	CHESAPEAKE APPALACHIA LLC	1/8+	682 548	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15565	I	9-11-3	ROBERT L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	682 552	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*15566	I	9-11-3	SHARON L WHETZAL	CHESAPEAKE APPALACHIA LLC	1/8+	682 556	N/A	Chesapeake to Chevron: 30/461	Chevron to Tug Hill: 36/148
10*47051.108.1	I	9-11-3	MICHAEL A WHETZEL	TH EXPLORATION LLC	1/8+	885 51	N/A	N/A	N/A
10*47051.108.5	I	9-11-3	BRENDA J WHETZEL	TH EXPLORATION LLC	1/8+	885 55	N/A	N/A	N/A
10*47051.108.6	I	9-11-3	TERRI MCCARDLE	TH EXPLORATION LLC	1/8+	895 23	N/A	N/A	N/A
10*47051.108.7	I	9-11-3	GARY FRANCIS WHETZAL	TH EXPLORATION LLC	1/8+	895 26	N/A	N/A	N/A
10*47051.243.1	J	9-11-2	MARY A FOX	TH EXPLORATION LLC	1/8+	879 332	N/A	N/A	N/A
10*47051.243.2	J	9-11-2	PAUL G FOX	TH EXPLORATION LLC	1/8+	879 335	N/A	N/A	N/A
10*47051.243.3	J	9-11-2	MARK H FOX	TH EXPLORATION LLC	1/8+	879 338	N/A	N/A	N/A
10*47051.243.4	J	9-11-2	DAVID E FOX	TH EXPLORATION LLC	1/8+	876 55	N/A	N/A	N/A
10*47051.243.5	J	9-11-2	LOUIS T FOX	TH EXPLORATION LLC	1/8+	876 58	N/A	N/A	N/A
10*47051.243.6	J	9-11-2	THOMAS J FOX	TH EXPLORATION LLC	1/8+	876 61	N/A	N/A	N/A

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SI-01955

STATE OF TEXAS §
§ SS
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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.

FURTHER, AFFIANT SAITH NOT.

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

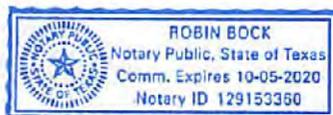
David D. Kalish
Affiant: David D. Kalish

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STATE OF TEXAS §
§ SS
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

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WV Department of Environmental Protection
Carol S Haight
WETZEL County 10-29-27 #
Instrument No 212093
Date Recorded 10/20/2016
Document Type AFDI
Pages Recorded 1
Book-Page 119-291
Recording Fee \$5.00
Additional \$6.00

STATE OF WEST VIRGINIA §
 §
COUNTY OF MARSHALL §

Jan Pest
MARSHALL County 12:43:01 PM
Instrument No 1404876
Date Recorded 05/20/2016
Document Type ASN
Pages Recorded 20
Book-Page 36-148
Recording Fee \$20.00
Additional \$8.00

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "**Assignment**") is made and entered into this 17th day of May, 2016 (the "**Effective Date**"), by and between **CHEVRON U.S.A. INC.** (hereinafter "**Assignor**") and **TH EXPLORATION, LLC** (hereinafter "**Assignee**") pursuant to the terms of that certain Acreage Trade Agreement between the Assignor and the Assignee dated May 2, 2016 (the "**Acreage Trade Agreement**"). Capitalized terms used but not defined herein and defined in the Acreage Trade Agreement shall have the meanings given to such terms in the Acreage Trade Agreement.

WITNESSETH:

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to those certain Oil and Gas Leases situated in Marshall County, West Virginia, as described in Exhibit "A", and as depicted in Exhibits "A-1" and "A-2", attached hereto and made a part hereof (hereinafter the "**Leases**"); and

WHEREAS, Assignor desires to assign, set over, and transfer to Assignee all of Assignor's right, title, and interest in and to the Leases as described below.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and subject to the limited warranties, restrictions and conditions hereinafter mentioned, the parties hereto, intending to be legally bound, do covenant and agree as follows:

1. **Assignment.** Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon, except that Assignor accepts and reserves from this Assignment the Chevron ORRI previously conveyed to Assignor and as described in that certain Memorandum of Assignment of Oil and Gas Lease Interests dated November 6, 2012 by and between Cornell Holdings Incorporated and Chevron U.S.A. Inc., which is recorded at Book 0028, Page 0239 in the Office of the County Clerk of Marshall County, West Virginia.

TO HAVE AND TO HOLD such right, title and interest in and to the Leases unto Assignee or its designee, and their respective successors and assigns, forever, in accordance with the provisions of this Assignment.

2. **Special Warranty.** Assignor represents and warrants that Assignor has not conveyed or otherwise encumbered (other than Permitted Encumbrances) its interest in the Conveyed Interests since the time that Assignor obtained its interests in the Leases. Assignor does covenant, promise and agree, to and with the Assignee, its respective successors and assigns, to forever specially warrant and defend the title to the Leases or portions thereof included under this Assignment, unto the Assignee and its respective successors and assigns, against the lawful claims of Assignor, and all persons claiming, or to claim, the same or any part thereof, by, through or under Assignor.

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Assignor represents and warrants that Assignor has paid any and all bonuses, rentals, royalties, overriding royalties, and other payments required by the Leases which were due for the period in which Assignor held its interests in the Leases, and that Assignor has fully performed all conditions necessary to maintain the Leases in full force and effect during such period, free and clear of all Encumbrances, except for and subject only to Permitted Encumbrances.

3. Successors and Assigns. The terms of this Assignment shall be binding upon and inure to the benefit of the parties hereto and each of their respective successors and assigns, and such terms shall be covenants running with the land, and with each subsequent transfer or assignment thereof.

4. Further Assurances. Assignor and Assignee hereby agree to take all actions and execute, acknowledge, and deliver all such instruments as are necessary or advisable to effectuate the purposes of this Assignment.

5. Counterparts; Recordation. This Assignment may be executed in any number of counterparts, each of which will be deemed an original instrument, but all of which shall collectively constitute one and the same instrument; provided that none of the parties will be bound to this Assignment unless and until all parties have executed a counterpart. For recording purposes, the signature and/or acknowledgment pages from multiple counterparts may be combined with one or more other counterparts without affecting the effect or validity of this Assignment. Assignee will be responsible for recording this Assignment in the appropriate public record, and will bear any costs associated with such recording.

6. Drafting. Preparation of this Assignment has been a joint effort of the parties and the resulting Assignment must not be construed more severely against any of the parties than against any other.

7. Incorporation. This Assignment is subject to and expressly incorporates the terms of the Acreage Trade Agreement by and between Assignor and Assignee. The Acreage Trade Agreement will govern to the extent of any conflict between the terms of this Assignment and the Acreage Trade Agreement.

(The remainder of this page intentionally left blank, signature pages to follow)

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IN WITNESS WHEREOF, and intending to be legally bound hereby, Assignor and Assignee have caused this Assignment to be duly executed the day and year first above written.

ASSIGNOR:

CHEVRON U.S.A. INC.

By: Marc Tate
Name: Marc Tate
Title: Attorney-In-Fact

ASSIGNEE:

TH EXPLORATION, LLC

By: _____
Name: _____
Title: _____

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IN WITNESS WHEREOF, and intending to be legally bound hereby, Assignor and Assignee have caused this Assignment to be duly executed the day and year first above written.

ASSIGNOR:

CHEVRON U.S.A. INC.

By: _____
Name: Marc Tate
Title: Attorney-In-Fact

ASSIGNEE:

TH EXPLORATION, LLC

By: David D. Kalish
Name: David D. Kalish
Title: VP-Land

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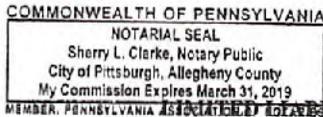
CORPORATE ACKNOWLEDGEMENT

STATE/Commonwealth of PENNSYLVANIA)
) SS:
COUNTY OF ALLEGHENY)

On this the 16th day of May, 2016, before me, SHERRY L. CLARKE the undersigned authority, personally appeared Marc Tate, who acknowledged himself to be the Attorney-In-Fact of CHEVRON U.S.A. INC., a Pennsylvania corporation, and that he as such Attorney-In-Fact, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as Attorney-In-Fact.

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

MY COMMISSION EXPIRES: March 31, 2019



Sherry L. Clarke
Notary Public

LIMITED LIABILITY COMPANY ACKNOWLEDGEMENT

STATE/Commonwealth of _____)
) SS:
COUNTY OF _____)

On this the _____ day of _____, 2016, before me, _____ the undersigned authority, personally appeared _____, who acknowledged himself to be a _____, a limited liability company and that he as such _____, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the limited liability company by himself as _____.

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

MY COMMISSION EXPIRES:

Notary Public

Prepared by:

CHEVRON U.S.A. INC.
Attn: Land Department
700 Cherrington Parkway,
Coraopolis, PA 15108

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CORPORATE ACKNOWLEDGEMENT

STATE/Commonwealth of PENNSYLVANIA)
) SS:
COUNTY OF ALLEGHENY)

On this the ___ day of _____, 2016, before me, _____
the undersigned authority, personally appeared Marc Tate, who acknowledged himself to
be the Attorney-In-Fact of CHEVRON U.S.A. INC., a Pennsylvania corporation, and that he as such
Attorney-In-Fact, being authorized to do so, executed the foregoing instrument for the purposes therein
contained by signing the name of the corporation by himself as Attorney-In-Fact.

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

MY COMMISSION EXPIRES:

Notary Public

LIMITED LIABILITY COMPANY ACKNOWLEDGEMENT

STATE/Commonwealth of Texas)
) SS:
COUNTY OF Tarrant)

On this the 17th day of May, 2016, before me,
Jennifer Mchugh the undersigned authority, personally appeared David A. Kalish, who
acknowledged himself to be Vice President Land of TH Exploration, a limited liability
company and that he as such Vice President Land, being authorized to do so, executed the
foregoing instrument for the purposes therein contained by signing the name of the limited liability
company by himself as Vice President Land.

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

MY COMMISSION EXPIRES: 1-26-2019

Jennifer Mchugh
Notary Public

Prepared by:

CHEVRON U.S.A. INC.
Attn: Land Department
700 Cherrington Parkway,
Coraopolis, PA 15108



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WV Department of
Environmental ProtectionEXHIBIT A - LEASES TO BE ASSIGNED TO TH EXPLORATION, LLC
MARSHALL COUNTY, WEST VIRGINIA

Attached to and made a part of that certain Assignment and Conveyance effective May 17, 2016 between Chevron U.S.A. Inc. and TH Exploration, LLC

ID	AGMT NAME	LESSEE	EFF DT	BK - PG	INSTRUMENT NO.	DEPTH	GROSS ACRS	APN	LESS & EXCEPT
876481	ANDERSON CAROL J ET AL	CHEVRON USA INC	1/23/2012	BK 772 PG 226	INST 1327661	ALL	92.50	09-0007-0027-0000-0000; 09-0007-0029-0000-0000; 09-0007-0029-0001-0000	54.45 GROSS AC OF 09-0007-0027-0000-0000, 09-0007-0029-0000-0000, & 09-0007-0029-0001- 0000 (AS DEPICTED ON EXHIBIT A-1)
938387	ANDERSON EMMA - SFX	CHEVRON USA INC	3/26/2015	BK 861 PG 586	INST 1378408	UPP	87.40	09-0011-0006-0000-0000, 09-0011-0006-0001-0000, 09-0011-0006-0002-0000	
938586	ASTON DIANE B - SFX	CHEVRON USA INC	2/5/2015	DK 864 PG 595	INST 1380296	ALL	151.79	09-0007-0022-0000-0000, 09-0007-0024-0000-0000	
934693	ASTON DONALD - SFX	CHEVRON USA INC	8/31/2014	BK 848 PG 274	INST 1371515	ALL	151.79	09-0007-0022-0000-0000, 09-0007-0024-0000-0000	
934733	ASTON HENRY W - SFX	CHEVRON USA INC	8/19/2014	BK 847 PG 138	INST 1370856	ALL	151.79	09-0007-0022-0000-0000, 09-0007-0024-0000-0000	
936946	ASTON ISAAC R - SFX	CHEVRON USA INC	2/13/2015	DK 886 PG 136	INST 1396358	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
934692	ASTON JOSEPH JR AIF MELVIN J ASTON - SFX	CHEVRON USA INC	9/4/2014	BK 848 PG 280	INST 1371518	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
939812	ASTON MARY MARGARET - SFX	CHEVRON USA INC	3/4/2015	BK 868 PG 283	INST 1382307	ALL	151.79	09-0007-0022-0000-0000, 09-0007-0024-0000-0000	
934694	ASTON PAUL J - SFX	CHEVRON USA INC	8/31/2014	DK 848 PG 277	INST 1371517	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
936943	ASTON THOMAS G - SFX	CHEVRON USA INC	12/15/2014	BK 860 PG 083	INST 1377843	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
934570	BETTINAZZI ELLEN L - SFX	CHEVRON USA INC	8/19/2014	BK 847 BK 496	INST 1371048	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
938388	BONAR GARY M ET UX - SFX	CHEVRON USA INC	3/25/2015	BK 861 PG 577	INST 1378405	UPP	87.40	09-0011-0006-0000-0000; 09-0011-0006-0001-0000, 09-0011-0006-0002-0000	
917307	BOREN JAMIE C - SFX	CHEVRON USA INC	5/13/2013	BK 797 PG 331	INST 1344700	ALL	53.33	09-0006-0008-0000-0000	
934696	BURKEY DELLA M - SFX	CHEVRON USA INC	8/31/2014	BK 848 PG 435	INST 1371671	ALL	151.79	09-0007-0022-0000-0000, 09-0007-0024-0000-0000	
904336	BURNS CYNTHIA GAY - SFX	CHEVRON USA INC	10/12/2012	BK 782 PG 114	INST 1334035	ALL	53.33	09-0006-0008-0000-0000	
913307	CHERRY VICKI J ET VIR - SFX	CHEVRON USA INC	3/11/2013	BK 793 PG 318	INST 1342015	ALL	60.00	09-0006-0012-0000-0000	
933712	CHESTNUT HOLDINGS LLC	REPUBLIC ENERGY VENTURES LLC	6/17/2014	BK 839 PG 170	INST 1366448	ALL	126.89	09-0004-0018-0000-0000, 09-0006-0005-0000-0000	89.16 GROSS AC OF 09-0004-0018-0000-0000 & 09-0006-0005-0000-0000 (AS DEPICTED ON EXHIBIT A-2)
921543	CHK-MAC LLC	CHESAPEAKE APPALACHIA LLC	4/1/2013	BK 798 PG 150	INST 1345205	ALL	142.38	09-0012-0002-0000-0000	

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MARSHALL COUNTY, WEST VIRGINIA

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ID	AGENT NAME	LESSEE	EFF DT	BK - PG	INSTRUMENT NO.	DEPTH	GROSS ACERS	APRN	LESS & EXCEPT
935633	CHRONI JUDITH A - SFX	CHEVRON USA INC	9/26/2014	BK 848 PG 428	INST 1371665	ALL	151.79	09-0007-0023-0000-0000; 09-0007-0024-0000-0000	
920633	CLARK ROBERT L - SFX	CHESAPEAKE APALACHIA LLC	6/25/2009	BK 635 PG 239	INST 1274143	ALL	110.00	09-0011-0009-0000-0000; 09-0011-0010-0000-0000; 09-0006-0010-0000-0000; 09-0006-0011-0000-0000; 09-0006-0015-0000-0000; 09-0010-0009-0000-0000; 09-0010-0011-0000-0000; 09-0011-0012-0000-0000	
867833	COFFEY FRANCES - SFX	TRIENERGY HOLDINGS, LLC	9/1/2010	BK 718 PG 378	INST 1297328	ALL	486.46	09-0011-0006-0000-0000; 09-0011-0006-0001-0000; 09-0011-0006-0002-0000	
938399	COLLINS JUDALENE R - SFX	CHEVRON USA INC	3/26/2015	BK 861 PG 571	INST 1378103	UFP	87.40		
935270	CONKLE LARRY LEE - SFX	CHEVRON USA INC	11/10/2014	BK 863 PG 354	INST 1379101	MCLS	151.79	09-0007-0023-0000-0000; 09-0007-0024-0000-0000	
935274	CONKLE ROY A - SFX	CHEVRON USA INC	11/10/2014	BK 863 PG 311	INST 1379391	MCLS	151.79	09-0007-0023-0000-0000; 09-0007-0024-0000-0000	
904443	CRADDOCK FLOY CARLEEN - SFX	CHEVRON USA INC	10/20/2012	BK 782 PG 318	INST 1331306	ALL	53.33	09-0006-0008-0000-0000	
936607	CRAWFORD MARTHA - SFX	CHEVRON USA INC	11/21/2014	BK 863 PG 542	INST 1379760	ALL	151.79	09-0007-0023-0000-0000; 09-0007-0024-0000-0000	
868163	CROW CARLAS	TRIENERGY HOLDINGS, LLC	12/16/2010	BK 728 PG 412	INST 1302558	ALL	6.34	09-0005-0017-0000-0000	
867834	CROW DAVID E - SFX	TRIENERGY HOLDINGS, LLC	10/12/2010	BK 718 PG 376	INST 1297352	ALL	486.46	09-0006-0009-0000-0000; 09-0006-0010-0000-0000; 09-0006-0011-0000-0000; 09-0006-0015-0000-0000; 09-0010-0009-0000-0000; 09-0010-0011-0000-0000; 09-0011-0012-0000-0000	
867845	CROW DESIRE L - SFX	TRIENERGY HOLDINGS, LLC	9/8/2010	BK 718 PG 334	INST 1297332	ALL	486.46	09-0006-0011-0000-0000; 09-0006-0015-0000-0000; 09-0010-0009-0000-0000; 09-0010-0011-0000-0000; 09-0011-0012-0000-0000	
921537	CROW ISAAC ET UX	CHESAPEAKE APALACHIA LLC	12/25/1900	BK 74 PG 394	NA	ALL	30.00	09-0014-0024-0000-0000	

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 MARSHALL COUNTY, WEST VIRGINIA
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ID	AGENT NAME	LESSEE	EFF DT	BK - PG	INSTRUMENT NO.	DEPTH	GROSS ACRES	APN	LESS & EXCEPT
868090	CROW JOHN - SFX	TRIENERGY HOLDINGS, LLC	3/9/2011	BK 726 PG 580	INST 1301672	ALL	486.46	09-0006-0009-0000-0000; 09-0006-0010-0000-0000; 09-0006-0011-0000-0000; 09-0006-0015-0000-0000; 09-0010-0009-0000-0000; 09-0010-0011-0000-0000; 09-0011-0012-0000-0000	
867844	CROW L PAUL - SFX	TRIENERGY HOLDINGS, LLC	9/9/2010	BK 718 PG 336	INST 1297333	ALL	486.46	09-0006-0009-0000-0000; 09-0006-0010-0000-0000; 09-0006-0011-0000-0000; 09-0006-0015-0000-0000; 09-0010-0009-0000-0000; 09-0010-0011-0000-0000; 09-0011-0012-0000-0000	
868091	CROW TIMOTHY - SFX	TRIENERGY HOLDINGS, LLC	3/9/2011	BK 726 PG 582	INST 1301673	ALL	486.46	09-0006-0009-0000-0000; 09-0006-0010-0000-0000; 09-0006-0011-0000-0000; 09-0006-0015-0000-0000; 09-0010-0009-0000-0000; 09-0010-0011-0000-0000; 09-0011-0012-0000-0000	
920825	DAKAN JOSEPH D - SFX	CHESAPEAKE APPALACHIA LLC	11/18/2009	BK 695 PG 519	INST 1283558	ALL	131.00	09-0005-0004-0000-0000; 09-0005-0004-0001-0000	109 GROSS AC OF 09-0005-0004-0000-0000 & 09-0005-0004-0001-0000 (AS DEPICTED ON EXHIBIT A-1)
936819	DANIEL MARY JANE - SFX	CHEVRON USA INC	12/8/2014	BK 858 PG 028	INST 1376640	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0022-0000-0000	
934698	DAVIS EMMA JANE - SFX	CHEVRON USA INC	8/31/2014	BK 848 PG 271	INST 1371513	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0022-0000-0000	
934363	DAYTON JAMES W - SFX	CHEVRON USA INC	7/28/2014	BK 847 PG 567	INST 1371084	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0022-0000-0000	
933254	DAYTON KENNETH L - SFX	CHEVRON USA INC	11/4/2014	BK 852 PG 366	INST 1374060	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0022-0000-0000	
940301	DAYTON WILLIAM E AIF CONNIE L DAYTON - SFX	CHEVRON USA INC	4/1/2015	BK 871 PG 190	INST 1384613	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0022-0000-0000	
904731	DENMAN WILLIAM RIAL - SFX	CHEVRON USA INC	10/15/2012	BK 782 PG 109	INST 1334034	ALL	53.33	09-0006-0008-0000-0000	
920799	DOBBS GARY LEE - SFX	CHESAPEAKE APPALACHIA LLC	11/17/2009	BK 693 PG 289	INST 1280321	ALL	21.78	09-0014-0015-0000-0000	

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MARSHALL COUNTY, WEST VIRGINIA
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ID	AGENT NAME	LESSEE	EFF DT	BK - PG	INSTRUMENT NO.	DEPTH	GROSS ACRES	APN	LESS & EXCEPT
920798	DOBBS JOHN DANIEL - SFX	CHESAPEAKE APPALACHIA LLC	11/17/2009	BK 694 PG 125	INST 1280977	ALL	21.78	09-0014-0015-0000-0000	
920597	DOBBS WARREN J - SFX	CHESAPEAKE APPALACHIA LLC	7/7/2009	BK 686 PG 321	INST 1275436	ALL	91.00	09-0012-0020-0000-0000	
938584	EMERSON ANNA - SFX	CHEVRON USA INC	2/4/2015	BK 864 PG 603	INST 1380299	ALL	151.79	09-0007-0022-0000-0000, 09-0007-0024-0000-0000	
866416	FLETCHER JERRY ET UX - SFX	TRIENERGY, INC	5/22/2007	BK 661 PG 154	INST 117284	ALL	103.30	09-0007-0006-0000-0000	5.007 GROSS AC OF 09-0007-0006-0000-0000 (AS DEPICTED ON EXHIBIT A-1)
904139	FRONAPFEL MARY RUTH - SFX	CHEVRON USA INC	10/10/2012	BK 781 PG 312	INST 1335615	ALL	60.00	09-0006-0012-0000-0000	
904744	PROWEN SANDRA - SFX	CHEVRON USA INC	10/10/2012	BK 781 PG 307	INST 1335614	ALL	60.00	09-0006-0012-0000-0000	
920827	GAST KAREN S - SFX	CHESAPEAKE APPALACHIA LLC	12/4/2009	BK 694 PG 534	INST 1281603	ALL	131.00	09-0005-0004-0000-0000, 09-0005-0004-0001-0000	109 GROSS AC OF 09-0005-0004-0000-0000 & 09-0005-0004-0001-0000 (AS DEPICTED ON EXHIBIT A-1)
923484	GATTS YVONNE S - SFX	CHEVRON USA INC	6/10/2014	BK 835 PG 055	INST 1364246	ALL	151.79	09-0007-0022-0000-0000, 09-0007-0024-0000-0000	
867879	GELLNER DIANNE ET VIR - SFX	TRIENERGY HOLDINGS, LLC	9/13/2010	BK 718 PG 345	INST 1297334	ALL	486.46	09-0006-0009-0000-0000, 09-0006-0010-0000-0000, 09-0006-0011-0000-0000, 09-0006-0015-0000-0000, 09-0010-0009-0000-0000, 09-0010-0011-0000-0000, 09-0011-0012-0000-0000	
920828	GONTA ADA HAZEL - SFX	CHESAPEAKE APPALACHIA LLC	12/15/2009	BK 695 PG 183	INST 1281936	ALL	131.00	09-0005-0004-0000-0000, 09-0005-0004-0001-0000	109 GROSS AC OF 09-0005-0004-0000-0000 & 09-0005-0004-0001-0000 (AS DEPICTED ON EXHIBIT A-1)
907366	GOODNIGHT ARNIE ET UX	CHEVRON USA INC	8/23/2012	BK 777 PG 059	INST 1330837	ALL	101.73	09-0007-0005-0000-0000, 09-0007-0014-0000-0000	44.11 GROSS AC OF 09-0007-0005-0000-0000 & 09-0007-0014-0000-0000 (AS DEPICTED ON EXHIBIT A-1)
920824	GORBY IVAN F - SFX	CHESAPEAKE APPALACHIA LLC	11/23/2009	BK 695 PG 527	INST 1282565	ALL	131.00	09-0005-0004-0000-0000, 09-0005-0004-0001-0000	109 GROSS AC OF 09-0005-0004-0000-0000 & 09-0005-0004-0001-0000 (AS DEPICTED ON EXHIBIT A-1)
920826	GORBY JOHN E - SFX	CHESAPEAKE APPALACHIA LLC	11/24/2009	BK 695 PG 523	INST 1282562	ALL	131.00	09-0005-0004-0000-0000, 09-0005-0004-0001-0000	109 GROSS AC OF 09-0005-0004-0000-0000 & 09-0005-0004-0001-0000 (AS DEPICTED ON EXHIBIT A-1)
904823	GROVES FLODYDENE S - SFX	CHEVRON USA INC	10/31/2012	BK 783 PG 619	INST 1335464	ALL	53.33	09-0006-0008-0000-0000	

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MARSHALL COUNTY, WEST VIRGINIA

ID	AGENT NAME	LESSEE	EFF DT	BR - PG	INSTRUMENT NO.	DEPTH	GROSS ACRES	APN	LESS & EXCEPT
921585	HADEGOSIN CHARLES R JR ET UX - SFX	CHEVRON USA INC	12/12/2013	BK 816 PG 423	INST 1355767	ALL	206.89	09-0007-0003-0000-0000; 09-0007-0003-0001-0000	61.39 GROSS AC OF 09-0007-0003-0000-0000 & 09-0007-0003-0001-0000 GAS DEDICATED ON EXHIBIT A-1)
913113	HAMAR JEFFRE - SFX	CHEVRON USA INC	2/21/2013	BK 792 PG 213	INST 1341258	ALL	53.33	09-0006-0008-0000-0000	
866788	HARTZELL RAY C ET UX	AR RESOURCES LLC	10/20/2009	BK 689 PG 162	INST 1277848	ALL	34.50	09-0006-0013-0000-0000	
868227	HARVEYH RICHARD L ET UX	TRIENERGY HOLDINGS, LLC	1/8/2011	BK 729 PG 638	INST 1303323	ALL	1.65	09-0014-0054-0000-0000	
917603	HAVINS WILLIAM R - SFX	CHEVRON USA INC	5/29/2013	BK 800 PG 144	INST 1346583	ALL	53.33	09-0006-0008-0000-0000	
921295	HAYHURST A FLORIDA COMPANY	CHESSAPEAKE APPALACHIA LLC	11/12/2010	BK 724 PG 008	INST 1300160	MCLS	91.65	09-0011-0013-0000-0000	
921292	HAYHURST A FLORIDA COMPANY - SFX	CHESSAPEAKE APPALACHIA LLC	11/12/2010	BK 724 PG 009	INST 1300161	MCLS	94.36	09-0014-0001-0000-0000; 09-0014-0001-0001-0000; 09-0014-0002-0000-0000; 09-0014-0003-0000-0000; 09-0014-0004-0000-0000; 09-0014-0005-0000-0000; 09-0014-0006-0000-0000; 09-0014-0007-0000-0000; 09-0014-0008-0000-0000; 09-0014-0009-0000-0000; 09-0014-0010-0000-0000	
921293	HAYHURST COMPANY - SFX	CHESSAPEAKE APPALACHIA LLC	11/12/2010	BK 727 PG 253	INST 1301989	ALL	5.00	09-0012-0031-0000-0000	
920634	HAYHURST COMPANY A FLORIDA COMPANY - SFX	CHESSAPEAKE APPALACHIA LLC	5/5/2010	BK 715 PG 442	INST 1296144	ALL	110.00	09-0011-0009-0000-0000; 09-0011-0010-0000-0000	
923477	HEINZBROTH DAVID - SFX	CHEVRON USA INC	6/16/2014	BK 836 PG 219	INST 13650150	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
923465	HELFER JANE L - SFX	CHEVRON USA INC	6/19/2014	BK 836 PG 342	INST 1365241	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
940302	HENGEROTH DOUGLAS PAUL AIF EMILY M HENGEROTH - SFX	CHEVRON USA INC	3/28/2015	BK 871 PG 193	INST 1384615	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
937373	HENGEROTH EMILY M - SFX	CHEVRON USA INC	1/8/2015	BK 862 PG 574	INST 1379327	ALL	151.79	09-0007-0024-0000-0000	
937374	HENNINGER GEORGE E - SFX	CHEVRON USA INC	1/6/2015	BK 863 PG 612	INST 1379787	ALL	151.79	09-0007-0024-0000-0000	

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ID	AGMT NAME	LESSEE	EFF DT	BK - PG	INSTRUMENT NO.	DEPTH	GROSS ACRES	APN	LESS & EXCEPT
867883	HOLLIDAY JACQUELINE ET VIR - SFX	TRIENERGY HOLDINGS, LLC	9/18/2010	BK 718 PG 347	INST 1297336	MCLS	486.46	09-0006-0009-0000-0000; 09-0006-0010-0000-0000; 09-0006-0011-0000-0000; 09-0006-0015-0000-0000; 09-0010-0009-0000-0000; 09-0010-0011-0000-0000; 09-0011-0012-0000-0000	
866651	HUBBDS ROBERT ET AL	CHIEF EXPLORATION & DEVELOPMENT LLC	9/8/2008	BK 677 PG 521	INST 1265447	ALL	108.61	09-0007-0007-0000-0000	102.669 GROSS AC OF 09-0007-0007-0000-0000 (AS DEPICTED ON EXHIBIT A-1)
935291	HUGHES TERESA ANNE - SFX	CHEVRON USA INC	1/1/02/2014	BK 853 PG 343	INST 1379398	MCLS	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
935390	HUPP NAOMI - SFX	CHEVRON USA INC	3/27/2015	BK 861 PG 604	INST 1378413	UPP	87.40	09-0011-0006-0002-0000; 09-0011-0006-0002-0000	
904435	JARMON JOYCE HOPE - SFX	CHEVRON USA INC	10/17/2012	BK 782 PG 329	INST 1334301	ALL	53.33	09-0006-0008-0000-0000	
935256	JOHNSON NORMAN G - SFX	CHEVRON USA INC	9/30/2014	BK 848 PG 363	INST 1371653	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
923479	JONES MARIAN D - SFX	CHEVRON USA INC	6/10/2014	BK 835 PG 038	INST 1364247	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
904727	KAY ALTA BELL - SFX	CHEVRON USA INC	10/15/2012	BK 782 PG 089	INST 1334031	ALL	53.33	09-0006-0008-0000-0000	
867329	KELLEY DONALD B ET UX - SFX	TRIENERGY HOLDINGS, LLC	3/17/2010	BK 704 PG 348	INST 1288929	ALL	48.05	9999-0000-1470-0900	
920436	KERNS WILLIAM F ET UX	CHESAPEAKE APPALACHIA LLC	1/16/2009	BK 677 PG 561	INST 1265702	ALL	87.40	09-0011-0006-0001-0000; 09-0011-0006-0002-0000	
867836	KEYES KAY - SFX	TRIENERGY HOLDINGS, LLC	9/2/2010	BK 718 PG 330	INST 1297329	ALL	486.46	09-0006-0009-0000-0000; 09-0006-0010-0000-0000; 09-0006-0011-0000-0000; 09-0006-0015-0000-0000; 09-0010-0009-0000-0000; 09-0010-0011-0000-0000; 09-0011-0012-0000-0000	

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ID	AGMT NAME	LESSEE	EFF DT	BK - PG	INSTRUMENT NO.	DEPTH	GROSS ACRS	APN	LESS & EXCEPT
867855	KIELGCZEWSKI ROSE MARIE - SFX	TRIENERGY HOLDINGS, LLC	9/9/2010	BK 718 PG 354	INST 1297338	ALL	486.46	09-0006-0009-0000-0000; 09-0006-0010-0000-0000; 09-0006-0011-0000-0000; 09-0006-0015-0000-0000; 09-0010-0009-0000-0000; 09-0010-0011-0000-0000; 09-0011-0012-0000-0000	
936942	KUHN MARY GLADYS BY AIF CONNIE LYONS - SFX	CHEVRON USA INC	12/15/2014	BK 860 PG 089	INST 1377845	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
940181	LAUGHTON GLEN MATTHEW - SFX	CHEVRON USA INC	5/14/2015	BK 873 PG 324	INST 1386674	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
935259	LAUGHTON RONALD BEN - SFX	CHEVRON USA INC	11/1/2014	BK 852 PG 360	INST 1374057	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
944097	LEACH DONALD E ET AL	CHEVRON USA INC	10/14/2015	BK 882 PG 209	INST 1393778	ALL	12.73	09-0005-0018-0000-0000; 09-0005-0020-0000-0000	
918258	LEVESQUE REBECCA BELL - SFX	CHEVRON USA INC	6/10/2013	BK 800 PG 515	INST 1346808	ALL	53.33	09-0006-0008-0000-0000	
904791	LEWIS MERRIET E - SFX	CHEVRON USA INC	10/11/2012	BK 782 PG 125	INST 1334057	ALL	53.33	09-0006-0008-0000-0000	
904540	LITTLEFIELD JO ANN - SFX	CHEVRON USA INC	10/23/2012	BK 783 PG 141	INST 1334954	ALL	53.33	09-0006-0008-0000-0000	
913328	LOWRY CHARLOTTE L - SFX	CHEVRON USA INC	2/22/2013	BK 792 PG 208	INST 1341257	ALL	53.33	09-0006-0008-0000-0000	
904528	MADISON ANN - SFX	CHEVRON USA INC	10/25/2012	BK 783 PG 176	INST 1334956	ALL	53.33	09-0006-0008-0000-0000	
866663	MASON JAMES ET AL	AB RESOURCES LLC	9/30/2009	BK 692 PG 461	INST 1279606	ALL	180.99	09-0010-0004-0000-0000; 09-0010-0005-0000-0000; 09-0010-0006-0000-0000; 09-0006-0014-0000-0000	ALL OF 09-0010-0004-0000-0000 (OR 67.29 GROSS AC AS DEPICTED ON EXHIBIT A-2)
894583	MASON RONALD KEITH ET UX - SFX	CHEVRON USA INC	5/21/2012	BK 772 PG 445	INST 1327926	ALL	60.00	09-0006-0012-0000-0000	
920491	MASON VICKIE - SFX	CHESAPEAKE APPALACHIA LLC	4/14/2009	BK 680 PG 413	INST 1268757	ALL	33.33	09-0011-0003-0000-0000	
920504	MASON VICKIE - SFX	CHESAPEAKE APPALACHIA LLC	4/14/2009	BK 680 PG 405	INST 1268754	ALL	36.51	09-0010-0012-0000-0000	
920498	MASON VICKIE FKA CROW VICKIE J - SFX	CHESAPEAKE APPALACHIA LLC	4/14/2009	BK 680 PG 409	INST 1268755	ALL	71.12	09-0010-0013-0000-0000	
920636	MASON VICKIE J AKA CROW VICKIE J - SFX	CHESAPEAKE APPALACHIA LLC	6/22/2009	BK 686 PG 239	INST 1275410	ALL	106.89	09-0011-0005-0000-0000	
920279	MCCARDLE KENNETH M ET UX REV LIVING TRST	CHEVRON USA INC	12/18/2013	BK 816 PG 499	INST 1355787	ALL	109.95	09-0011-0011-0000-0000	
921162	MCCONNELL WILLIAM D	CHESAPEAKE APPALACHIA LLC	5/8/2010	BK 715 PG 447	INST 1296148	ALL	15.00	09-0010-0014-0000-0000	

EXHIBIT 0036 MFC 0161

EXHIBIT A - LEASES TO BE ASSIGNED TO THE EXPLORATION, LLC
 MARSHALL COUNTY, WEST VIRGINIA
 Attached to and made a part of that certain Assignment and Conveyance effective May 17, 2016 between Chevron U.S.A. Inc. and The Exploration, LLC

ID	AGENT NAME	LESSEE	EFF DT	BK - PG	INSTRUMENT NO.	DEPTH	GROSS ACRES	APN	LESS & EXCEPT
937840	MCGILLTON KEVIN E ET UX - SFX	CHEVRON USA INC	1/9/2015	BK 830 PG 351	INST 1372504	NCLTS	63.51	09-0007-0016-0000-0000; 09-0007-0017-0000-0000; 09-0007-0018-0000-0000; 09-0007-0019-0000-0000; 09-0007-0020-0000-0000	22.9 GROSS AC OF 09-0007-0016-0000-0000, 09-0007-0017-0000-0000 & 09-0007-0018-0000- 0000 (AS DEPICTED ON EXHIBIT A-1)
920644	MEADE ORVILLE JACKSON - SFX	CHESAPEAKE APPALACHIA LLC	8/14/2009	BK 687 PG 144	INST 1277086	ALL	47.25	09-0013-0022-0000-0000	
921538	MONEY FOR MINERALS LLC - SFX	CHEVRON USA INC	12/6/2013	BK 817 PG 424	INST 1356188	ALL	103.21	09-0015-0018-0000-0000	
866498	MOORE, RONALD AND EDNA	TRIENERGY, INC	6/6/2007	BK 661 PG 449	INST 1316895	ALL	154.44	09-0007-0012-0000-0000; 09-0007-0012-0001-0000; 09-0007-0013-0000-0000	38.37 GROSS AC OF 09-0007-0012-0001-0000 (AS DEPICTED ON EXHIBIT A-1)
904730	MORGAN LAURA L - SFX	CHEVRON USA INC	10/11/2012	BK 782 PG 119	INST 1334038	ALL	53.33	09-0006-0008-0000-0000	
938587	MYERS PATTY L - SFX	CHEVRON USA INC	2/10/2015	BK 857 PG 100	INST 1381450	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
935261	OLDFIELD KAREN KAY - SFX	CHEVRON USA INC	10/14/2014	BK 834 PG 111	INST 1375382	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
936443	OLDFIELD KENNETH WENDELL - SRX	CHEVRON USA INC	11/7/2014	BK 861 PG 589	INST 1378409	ALL	151.79	09-0007-0022-0000-0000	
866771	OTT BETTY R	TRIENERGY HOLDINGS, LLC	10/12/2009	BK 687 PG 604	INST 1276988	ALL	11.43	09-0005-0014-0004-0000; 09-0005-0019-0000-0000	7.33 GROSS AC OF 09-0005-0014-0004-0000 (AS DEPICTED ON EXHIBIT A-1)
906791	PATRELLA VINCENT ET UX - SFX	CHEVRON USA INC	12/20/2012	BK 789 PG 446	INST 1339783	ALL	162.69	09-0006-0003-0000-0000	ALL OF 09-0006-0003-0000-0000 (OR 95.937 GROSS AC AS DEPICTED ON EXHIBIT A-2)
867833	PHELPS ELAINE ET VIR - SFX	TRIENERGY HOLDINGS, LLC	9/1/2010	BK 718 PG 326	INST 1297327	ALL	486.46	09-0006-0009-0000-0000; 09-0006-0010-0000-0000; 09-0006-0011-0000-0000; 09-0006-0012-0000-0000; 09-0006-0013-0000-0000; 09-0006-0014-0000-0000; 09-0006-0015-0000-0000; 09-0006-0016-0000-0000; 09-0006-0017-0000-0000; 09-0006-0018-0000-0000; 09-0006-0019-0000-0000; 09-0006-0020-0000-0000	
904579	PRICKETT CHARLOTTE - SFX	CHEVRON USA INC	10/25/2012	BK 783 PG 191	INST 1334969	ALL	53.33	09-0006-0008-0000-0000	
920833	KAU PATSY JO - SFX	CHESAPEAKE APPALACHIA LLC	12/11/2009	BK 694 PG 561	INST 1281612	ALL	131.00	09-0005-0004-0000-0000; 09-0005-0004-0001-0000	109 GROSS AC OF 09-0005-0004-0000-0000 & 09-0005-0004-0001-0000 (AS DEPICTED ON EXHIBIT A-1)
923481	REYNOLDS SHARON M - SFX	CHEVRON USA INC	6/18/2014	BK 840 PG 322	INST 1367225	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0022-0000-0000	
923480	RINE CHARLES A - SFX	CHEVRON USA INC	6/10/2014	BK 835 PG 022	INST 1364242	ALL	151.79	09-0007-0024-0000-0000	

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MARSHALL COUNTY, WEST VIRGINIA

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ID	AGMT NAME	LESSEE	EFF DT	BK - PG	INSTRUMENT NO.	DEPTH	GROSS ACRS	APN	LESS & EXCEPT
936941	RINE DANIEL L - SFX	CHEVRON USA INC	12/15/2014	BK 860 PG 086	INST 1377844	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
923467	RINE DAVID F - SFX	CHEVRON USA INC	6/19/2014	BK 837 PG 130	INST 1365603	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
923478	RINE GLADYS M - SFX	CHEVRON USA INC	6/18/2014	BK 836 PG 329	INST 1365236	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
934362	RINE JAY LEROY - SFX	CHEVRON USA INC	7/31/2014	BK 840 PG 319	INST 1367240	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
935383	RINE MICHAEL J ET UX	CENTRAL MICHIGAN EXPLORATION LLC	3/13/2008	BK 668 PG 147	INST 1252027	ALL	107.46	09-0007-0001-0000-0000	
923470	RINE PAUL WAYNE - SFX	CHEVRON USA INC	7/22/2014	BK 837 PG 133	INST 1365607	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
923476	RINE PHILLIP C - SFX	CHEVRON USA INC	6/18/2014	BK 836 PG 332	INST 1365238	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
906416	ROUPE CHRISTOPHER A ET UX - SFX	CHEVRON USA INC	12/20/2012	BK 789 PG 439	INST 1339782	ALL	162.69	09-0006-0003-0000-0000; 09-0010-0003-0000-0000	ALL OF 09-0006-0003-0000-0000 (OR 96.937 GROSS AC AS DEPICTED ON EXHIBIT A-2)
906599	ROUPE WILLIAM B - SFX	CHEVRON USA INC	12/20/2012	BK 789 PG 430	INST 1339781	ALL	162.69	09-0006-0003-0000-0000; 09-0010-0003-0000-0000	ALL OF 09-0006-0003-0000-0000 (OR 96.937 GROSS AC AS DEPICTED ON EXHIBIT A-2)
906598	ROUPE WILLIAM N ET UX - SFX	CHEVRON USA INC	12/20/2012	BK 789 PG 415	INST 1339776	ALL	162.69	09-0006-0003-0000-0000; 09-0010-0003-0000-0000	ALL OF 09-0006-0003-0000-0000 (OR 96.937 GROSS AC AS DEPICTED ON EXHIBIT A-2)
923482	RUCKMAN GLADYS - SFX	CHEVRON USA INC	6/16/2014	BK 840 PG 319	INST 1367224	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
920599	SAMPSON RUTH NAOMI BY AIF SAMPSON H CARL - SFX	CHESAPEAKE APPALACHIA LLC	7/15/2009	BK 686 PG 284	INST 1275425	ALL	91.00	09-0012-0020-0000-0000	
936448	SEAVER JENNIFER - SFX	CHEVRON USA INC	11/10/2014	BK 853 PG 272	INST 1374550	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
936350	SEAVER PAULA R	CHEVRON USA INC	11/1/2014	BK 853 PG 483	INST 1374550	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
935264	SEAVER ROBERT J - SFX	CHEVRON USA INC	10/9/2014	BK 854 PG 077	INST 1375364	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
913324	SIBURT ALAN K ET UX - SFX	CHEVRON USA INC	3/11/2013	BK 793 PG 325	INST 1342017	ALL	60.00	09-0006-0012-0000-0000	
913322	SIBURT JAMES B ET UX - SFX	CHEVRON USA INC	3/11/2013	BK 793 PG 332	INST 1342018	ALL	60.00	09-0006-0012-0000-0000	
904346	SIBURT KENNETH D - SFX	CHEVRON USA INC	10/10/2012	BK 781 PG 218	INST 1333354	ALL	60.00	09-0006-0012-0000-0000	
913327	SIBURT RODNEY L - SFX	CHEVRON USA INC	3/12/2013	BK 793 PG 346	INST 1342020	ALL	60.00	09-0006-0012-0000-0000	

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ID	AGENT NAME	LESSEE	EFF. DT	BK + PG	INSTRUMENT NO.	DEPTH	GROSS ACRES	APN	LESS & EXCEPT
920645	SNYDER TAMALA JANE - SFX	CHESSAPEAKE APPALACHIA LLC	8/14/2009	BK 687 PG 151	INST 1277088	ALL	47.25	09-0013-0023-0000-0000	
920492	SOUTH MARY A - SFX	CHESSAPEAKE APPALACHIA LLC	4/18/2009	BK 682 PG 231	INST 1270057	ALL	33.33	09-0011-0003-0000-0000	
920499	SOUTH MARY A - SFX	CHESSAPEAKE APPALACHIA LLC	4/18/2009	BK 681 PG 410	INST 1269482	ALL	71.12	09-0010-0013-0000-0000	
920506	SOUTH MARY A - SFX	CHESSAPEAKE APPALACHIA LLC	4/18/2009	BK 681 PG 414	INST 1269483	ALL	36.51	09-0010-0012-0000-0000	
920638	SOUTH MARY A - SFX	CHESSAPEAKE APPALACHIA LLC	9/11/2009	BK 690 PG 615	INST 1278434	ALL	106.89	09-0011-0005-0000-0000	
923483	STALNAKER KATHERINE A	CHEVRON USA INC	6/12/2014	BK 830 PG 325	INST 1367227	ALL	151.79	09-0007-0022-0000-0000	
867769	STERN WILLIAM K ET UX	NIPAR, LLC	9/6/2010	BK 718 PG 320	INST 1297324	ALL	121.85	09-0001-0020-0000-0000	
923074	STEVENS SARAH T - SFX	CHEVRON USA INC	5/6/2014	BK 834 PG 432	INST 1361045	ALL	151.79	09-0007-0022-0000-0000	
923341	STEVENS THOMAS T - SFX	CHEVRON USA INC	5/26/2014	BK 836 PG 290	INST 1366221	ALL	151.79	09-0007-0022-0000-0000	
933249	STIRLING LAWRENCE W - SFX	CHEVRON USA INC	11/9/2014	BK 852 PG 384	INST 1374067	ALL	151.79	09-0007-0022-0000-0000	
904726	STURMAN CRAIG - SFX	CHEVRON USA INC	10/12/2012	BK 782 PG 130	INST 1334059	ALL	53.33	09-0006-0008-0000-0000	
904747	STURMAN JANIE E	CHEVRON USA INC	10/12/2012	BK 782 PG 140	INST 1334062	ALL	53.33	09-0006-0008-0000-0000	
904728	STURMAN JOHN FRANK - SFX	CHEVRON USA INC	10/12/2012	BK 782 PG 135	INST 1334060	ALL	53.33	09-0006-0008-0000-0000	
868107	VENANCO 21ST CENTURY ENERGY INC - SFX	TRINERGY HOLDINGS, LLC	8/24/2010	BK 722 PG 281	INST 1299176	ALL	206.89	09-0007-0003-0000-0000	56.9 GROSS AC OF 09-0007-0003-0000-0000 (AS DEPICTED ON EXHIBIT A-1)
920998	WADE SHARON KAY - SFX	CHESSAPEAKE APPALACHIA LLC	7/7/2009	BK 686 PG 262	INST 1275117	ALL	91.00	09-0012-0020-0000-0000	

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Environmental ProtectionEXHIBIT A - LEASES TO BE ASSIGNED TO TH EXPLORATION, LLC
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ID	AGMT NAME	LESSEE	EFF DT	BK - PG	INSTRUMENT NO.	DEPTH	GROSS ACRS	APN	LESS & EXCEPT
866754	WELLMAN RALPH E - SFX	TRIENERGY HOLDINGS, LLC	7/29/2009	BK 686 PG 412	INST 1275614	ALL	206.89	09-0007-0003-0000-0000 09-0007-0003-0001-0000	61.39 GROSS AC OF 09-0007-0003-0000-0000 & 09-0007-0003-0001 (AS DEPICTED ON EXHIBIT A-1)
934438	WHEELER SUSAN JANE - SFX	CHEVRON USA INC	8/6/2014	BK 847 PG 473	INST 1371041	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
920493	WHETZAL MARK L - SFX	CHESAPEAKE APPALACHIA LLC	5/7/2009	BK 682 PG 544	INST 1270655	ALL	33.33	09-0011-0003-0000-0000	
920500	WHETZAL MARK L - SFX	CHESAPEAKE APPALACHIA LLC	5/7/2009	BK 682 PG 560	INST 1270659	ALL	71.12	09-0010-0013-0000-0000	
920507	WHETZAL MARK L - SFX	CHESAPEAKE APPALACHIA LLC	5/7/2009	BK 683 PG 073	INST 1271009	ALL	36.51	09-0010-0012-0000-0000	
920641	WHETZAL MARK L - SFX	CHESAPEAKE APPALACHIA LLC	11/12/2009	BK 693 PG 576	INST 1280826	ALL	105.89	09-0011-0005-0000-0000	
920494	WHETZAL RAY A JR - SFX	CHESAPEAKE APPALACHIA LLC	5/7/2009	BK 682 PG 548	INST 1270656	ALL	33.33	09-0011-0003-0000-0000	
920501	WHETZAL RAY A JR - SFX	CHESAPEAKE APPALACHIA LLC	5/7/2009	BK 682 PG 584	INST 1270661	ALL	71.12	09-0010-0013-0000-0000	
920508	WHETZAL RAY A JR - SFX	CHESAPEAKE APPALACHIA LLC	5/7/2009	BK 683 PG 069	INST 1271008	ALL	36.51	09-0010-0012-0000-0000	
920640	WHETZAL RAY A JR - SFX	CHESAPEAKE APPALACHIA LLC	11/12/2009	BK 693 PG 571	INST 1280825	ALL	106.89	09-0011-0005-0000-0000	
920496	WHETZAL ROBERT L - SFX	CHESAPEAKE APPALACHIA LLC	5/12/2009	BK 682 PG 532	INST 1270657	ALL	33.33	09-0011-0003-0000-0000	
920503	WHETZAL ROBERT L - SFX	CHESAPEAKE APPALACHIA LLC	5/12/2009	BK 682 PG 500	INST 1270641	ALL	71.12	09-0010-0013-0000-0000	
920509	WHETZAL ROBERT L - SFX	CHESAPEAKE APPALACHIA LLC	5/12/2009	BK 682 PG 536	INST 1270653	ALL	36.51	09-0010-0012-0000-0000	
920639	WHETZAL ROBERT L - SFX	CHESAPEAKE APPALACHIA LLC	10/9/2009	BK 690 PG 559	INST 1278415	ALL	106.89	09-0011-0005-0000-0000	
920497	WHETZAL SHARON L - SFX	CHESAPEAKE APPALACHIA LLC	5/20/2009	BK 682 PG 556	INST 1270658	ALL	33.33	09-0011-0003-0000-0000	
920502	WHETZAL SHARON L - SFX	CHESAPEAKE APPALACHIA LLC	5/20/2009	BK 682 PG 568	INST 1270663	ALL	71.12	09-0010-0013-0000-0000	
920510	WHETZAL SHARON L - SFX	CHESAPEAKE APPALACHIA LLC	5/20/2009	BK 682 PG 540	INST 1270654	ALL	36.51	09-0010-0012-0000-0000	
920637	WHETZAL SHARON L - SFX	CHESAPEAKE APPALACHIA LLC	8/13/2009	BK 687 PG 147	INST 1277087	ALL	106.89	09-0011-0005-0000-0000	
936506	WHETZEL BRENDA JOYCE - SFX	CHEVRON USA INC	11/10/2014	BK 863 PG 635	INST 1379799	MCLS	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	

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BOOK 0036 PAGE 0165

EXHIBIT A - LEASES TO BE ASSIGNED TO THE EXPLORATION, LLC
 MARSHALL COUNTY, WEST VIRGINIA
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ID	ACNT NAME	LESSEE	EFF DT	BK - PG	INSTRUMENT NO.	DEPTH	GROSS ACRES	APN	LESS & EXCEPT
906502	WHITLICH RICKY L ET AL	CHEVRON USA INC	9/15/2012	BK 780 PG 226	INST 133035	ALL	143.66	09-0007-0015-0000-0000; 09-0007-0021-0000-0000; 09-0007-0030-0000-0000; 09-0007-0031-0000-0000	73.28 GROSS AC OF 09-0007-0015-0000-0000, 09-0007-0021-0000-0000, 09-0007-0030-0000- 0000 & 09-0007-0031-0000-0000 (AS DEPICTED ON EXHIBIT A-1)
923073	WILHELM MICHELLE R - SFX	CHEVRON USA INC	5/12/2014	BK 834 PG 456	INST 1364057	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
923108	WORKMAN ARTHUR R ET UX - SFX	CHEVRON USA INC	5/20/2014	BK 837 PG 361	INST 1365803	ALL	151.79	09-0007-0022-0000-0000; 09-0007-0024-0000-0000	
866564	YEATER SHERWOOD - SFX	TRINERGY, INC	5/29/2007	BK 748 PG 268	INST 117736	ALL	103.30	09-0007-40006-0000-0000	5.007 GROSS AC OF 09-0007-0006-0000-0000 (AS DEPICTED ON EXHIBIT A-1)
934697	ZEHNDER RONALD A - SFX	CHEVRON USA INC	8/27/2014	BK 847 PG 213	INST 1370395	ALL	151.79	09-0007-40024-0000-0000; 09-0007-40024-0000-0000	
923076	ZEHNDER ROBERT S - SFX	CHEVRON USA INC	5/9/2014	BK 834 PG 437	INST 1364046	ALL	151.79	09-0007-40024-0000-0000	

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August 4, 2017

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

RE: Heaven Hill Unit 2W-10HM

Subject: County Route 21/3 and County Route 21/9 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 21/3 and County Route 21/9 in the area reflected on the Heaven Hill Unit 2W-10HM 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-hill.com.

Sincerely,

Amy L. Miller
Permitting Specialist– Appalachia Region

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

Date of Notice Certification: 08/04/2017

API No. 47- 051 - 01955
Operator's Well No. Heaven Hill Unit 2W-10HM
Well Pad Name: Heaven Hill Unit 2

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>524,572.15</u>
County: <u>Marshall</u>		Northing: <u>4,406,723.16</u>
District: <u>Meade</u>	Public Road Access: <u>Blake Ridge Road (Co. Rt. 21/3)</u>	
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>Charles R. Hagedorn, Jr., et ux</u>	
Watershed: <u>(HUC 10) 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>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><input type="checkbox"/> RECEIVED</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.

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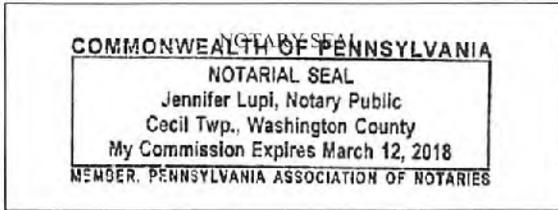
AUG 7 2017

SI-01955

Certification of Notice is hereby given:

THEREFORE, I Amy 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 Blvd, Southpointe Plaza II, Suite 200</u>
By:	<u>Amy Miller <i>Amy Miller</i></u>		<u>Canonsburg, PA 15317</u>
Its:	<u>Permitting Specialist - Appalachia</u>	Facsimile:	<u>724-338-2030</u>
Telephone:	<u>724-338-2026</u>	Email:	<u>amiller@tug-hillop.com</u>



Subscribed and sworn before me this 4th day of Aug, 2017.
Jennifer Lupi Notary Public
 My Commission Expires March 12, 2018

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.

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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: 8/4/2017 **Date Permit Application Filed:** 8/7/2017

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: Charles R. Hagedorn, Jr., ex ux
Address: 78 Hagedorn Drive
Glen Easton, WV 26039

Name: _____
Address: _____

SURFACE OWNER(s) (Road and/or Other Disturbance)
Name: Michael J. Rine, et ux
Address: 1466 Blake Ridge Road
Glen Easton, WV 26039

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)
Name: _____
Address: _____

COAL OWNER OR LESSEE
Name: Murray Energy Corporation
Address: 46226 National Road
St. Clairsville, OH 43950

COAL OPERATOR
Name: _____
Address: _____

SURFACE OWNER OF WATER WELL AND/OR WATER PURVEYOR(s)
Name: _____
Address: _____
*See supplement page 1A attached

OPERATOR OF ANY NATURAL GAS STORAGE FIELD
Name: _____
Address: _____

*Please attach additional forms if necessary

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(8-13)

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Office of Oil and Gas

API NO. 47- 051

01955

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OPERATOR WELL NO. Heaven Hill Unit 2W-10HW

Well Pad Name: Heaven Hill Unit 2

WV Department of
Environmental Protection

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

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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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WW-6A
(8-13)

API NO. 47-051 - 01955
OPERATOR WELL NO. Heaven Hill Unit 2W-10HM
Well Pad Name: Heaven Hill Unit 2

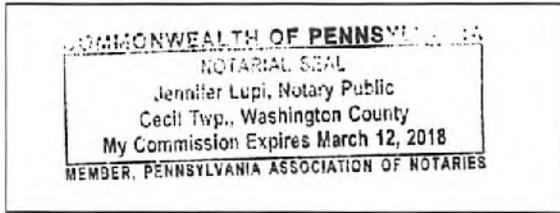
Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Telephone: 724-338-2026
Email: amiller@tug-hill-op.com *amy miller*

Address: 380 Southpointe Blvd, Southpointe Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030

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 4th day of Aug, 2017.
Jennifer Lupi Notary Public
My Commission Expires March 12, 2018

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Exhibit WW-6A**Supplement Pg. 1A**

Tug Hill Operating, LLC
 380 Southpointe Blvd, Suite 200
 Cannonsburg, PA 15137

Residences within Two-Thousand Feet (2,000')

Well: Heaven Hill 2W - 10HM
 District: Meade (House #'s 1, 2, 3, 4, 5 & 6)
 State: WV

There are six (6) residences, no businesses, no churches, no schools or no emergency facilities within two-thousand feet (2,000') of the above referenced well location.

House 1 TM 7 Pcl. 3.1 Charles R. Hagedorn Jr., Et Ux ✓ Phone: 304-845-7332 Physical Address: 102 Hagedorn Dr. Glen Easton, WV 26039 Tax Address: 78 Hagedorn Dr. Glen Easton, WV 26039	House 2 TM 7 Pcl. 3.1 Charles R. Hagedorn Jr., Et Ux ✓ Phone: 304-845-7332 Physical Address: 78 Hagedorn Dr. Glen Easton, WV 26039 Tax Address: 78 Hagedorn Dr. Glen Easton, WV 26039
House 3 TM 7 Pcl. 3 ✓ Charles R. Jr., & Annemarie H. Hagedorn Phone: 304-845-7332 Physical Address: 1367 Blake Ridge Rd. Glen Easton, WV 26039 Tax Address: 78 Hagedorn Dr. Glen Easton, WV 26039	House 4 TM 7 Pcl. 1 ✓ Michael J. Rine, Et Ux Phone: None Found Physical Address: UNKNOWN Tax Address: 1466 Blake Ridge Rd. Glen Easton, WV 26039
House 5 TM 7 Pcl. 1 ✓ Michael J. Rine, Et Ux Phone: None Found Physical Address: 1466 Blake Ridge Rd. Glen Easton, WV 26039 Tax Address: Same	House 6 TM 6 Pcl. 7 ✓ Scott C. & Carolyn R. Harris Phone: None Found Physical Address: 1944 Blake Ridge Rd. Glen Easton, WV 26039 Tax Address: Same

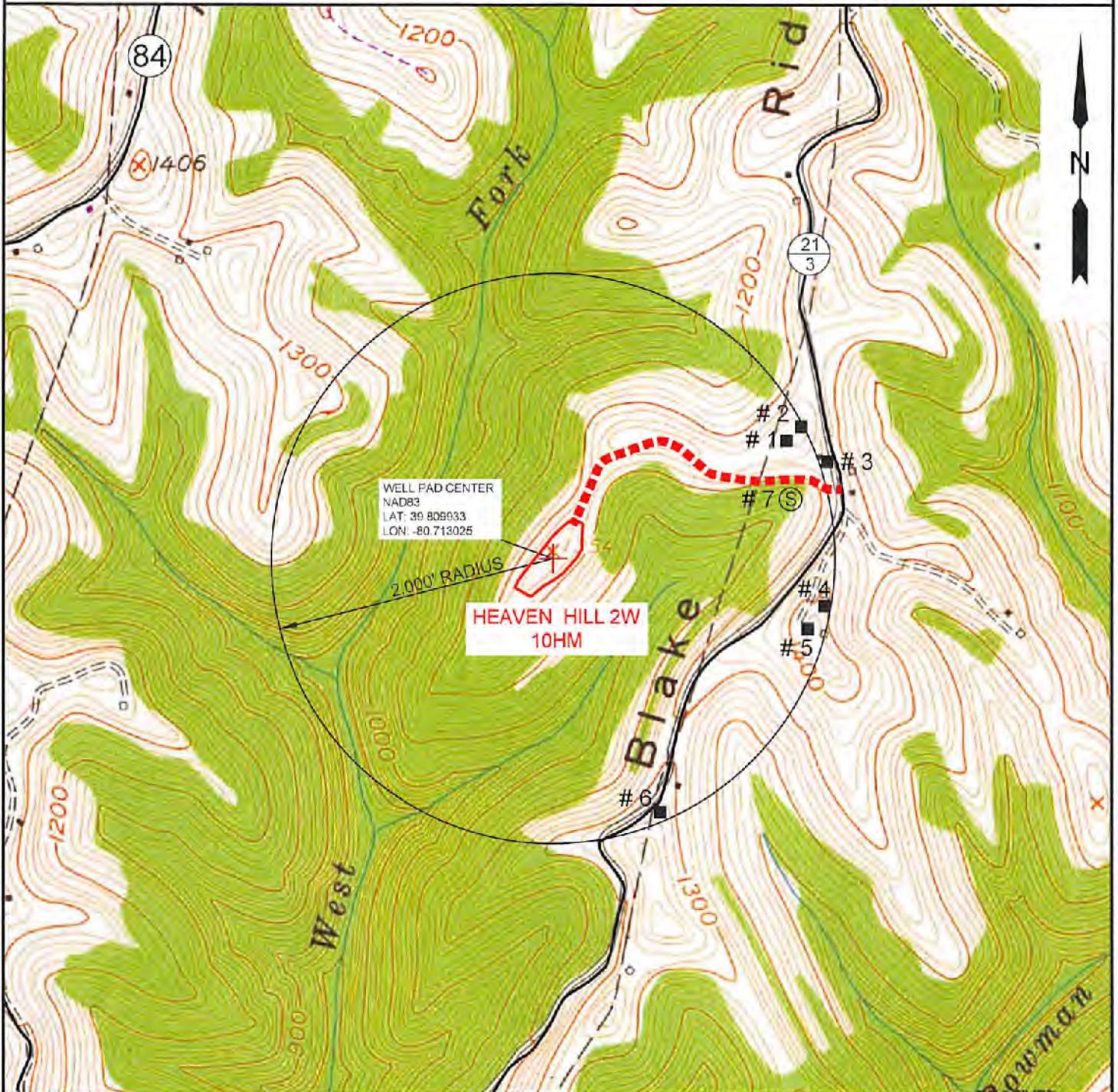
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PROPOSED HEAVEN HILL 2W - 10HM



NOTE: THERE APPEARS TO BE SEVEN (7) POSSIBLE WATER SOURCES WITHIN 2,000'.
 LEGEND: (S) = SPRING ■ = RESIDENCE

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 Land & Energy Development
 Solutions from the ground up.
 P.O. Box 150 • 12 Vanhorn Drive • Glenville, WV 26031 • (304) 452-5634
 www.slsurveys.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8703	07/27/2017	1" = 1000'

WV Department of Environmental Protection
TUG HILL OPERATING
 09/22/2017

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: April 06, 2017 **Date of Planned Entry:** April 13, 2017

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: Charles R. Hagedorn, Jr., et ux ✓
Address: 78 Hagedorn Drive
Glen Easton, WV 26039

Name: Michael J. Rine ✓
Address: 1456 Blake Ridge Road
Glen Easton, WV 26039

Name: None
Address: _____

COAL OWNER OR LESSEE

Name: Murray Energy Corporation ✓
Address: 46226 National Road
St. Clairsville, OH 43950

MINERAL OWNER(s)

Name: JMK Irrevocable Trust ✓
Address: 600 Texas Street, Suite 101
Fort Worth, TX 76102

*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>LAT: 39.8099328, LON: -80.7130249</u>
County: <u>Marshall</u>	Public Road Access: <u>Blake Ridge Road (Co. Rt. 21/3)</u>
District: <u>Meade</u>	Watershed: <u>HUC-10 Fish Creek</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>Charles R. Hagedorn</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: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: jwhite@lug-hillop.com

Address: 380 Southpointe Blvd, Southpointe Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030

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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.

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Operator Well No. Heaven Hill 2W-10HM**WW-6A3 Notice of Entry for Plat Survey****Attachment 1 of 1****Mineral Owner(s):**

Name: Marcellus TX Minerals Partners, LTD
Address: 307 W 7th St.
Fort Worth, TX 76102

Name: Purpleburgh Ventures, LLC
Address: 306 W 7th St.
Fort Worth, TX 76102

Name: Charles R. Hagedorn, Jr., et ux
Address: 78 Hagedorn Drive
Glen Easton, WV 26039

Name: Venango 21st Century
Address: 301 Moon Clinton Road
Moon Township, PA 15108

Name: TriEnergy Holdings, LLC
Address: 412 Beaver Street, 2nd Floor
Sewickley, PA 15143

Name: Patriot Restoration
Address: 713 Sycamore Road Extension
Sewickley, PA 15143

Name: Ralph E. Wellman
Address: 2209 Bowman Ridge Rd.
Glen Easton, WV 26039

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

1900 Kanawha Boulevard East • Building Five • Room 110
 Charleston, West Virginia 25305-0430 • (304) 558-3505

Jim Justice
 Governor

Thomas J. Smith, P. E.
 Secretary of Transportation/
 Commissioner of Highways

April 10, 2017

James A. Martin, Chief
 Office of Oil and Gas
 Department of Environmental Protection
 601 57th Street, SE
 Charleston, WV 25304

Subject: DOH Permit for the Heaven Hills Unit 2 Pad, Marshall County
 Heaven Hills Unit 2W-10HM Well site

47-051-01955 ✓

Dear Mr. Martin,

This well site will be accessed from a DOH permits #06-2016-0284 & 0287 which have been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off of Marshall County Route 21/3 SLS.

The operator has signed a STATEWIDE 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,

Gary K. Clayton, P.E.
 Regional Maintenance Engineer
 Central Office O&G Coordinator

Cc: Jonathan White
 Tug Hill Operating, LLC
 CH, OM, D-6
 File

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 Office of Oil and Gas

AUG 7 2017

WV Department of
 Environmental Protection

09/22/2017



PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Heaven Hill Unit 2W-10HM

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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WV DEP OOG
 11/2/2016

Heaven Hill 2 Site
 Site Design, Construction Plan, &
 Erosion and Sediment Control Plans
 Tug Hill Operating
 Marshall County
 Meade District
 Latitude 39.809933°
 Longitude -80.713025°
 Middle Fish Creek Watershed

Pertinent Site Information
 Heaven Hill 2 Site
 Emergency Number 304-844-1920
 Marshall County, West Virginia
 Meade District, Mountain View
 Watershed: Middle Fish Creek

Exhibit A: Final Design: Issue for Permitting



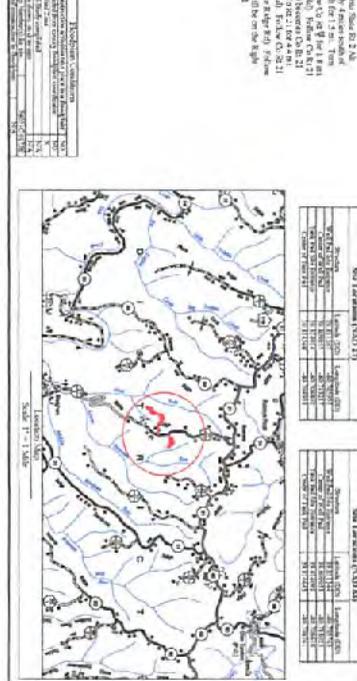
Sheet No.	Scale	Area (Acres)
1	1" = 100'	1.00
2	1" = 100'	1.00
3	1" = 100'	1.00
4	1" = 100'	1.00
5	1" = 100'	1.00
6	1" = 100'	1.00
7	1" = 100'	1.00
8	1" = 100'	1.00
9	1" = 100'	1.00
10	1" = 100'	1.00

Project Location
 Heaven Hill 2 Site
 Meade District
 Marshall County, WV

Client
 Tug Hill Operating
 10000 Tug Hill Road
 Marlinton, WV 26041

Design Team
 K&S Associates, Inc.
 10000 Tug Hill Road
 Marlinton, WV 26041

811
 Call before you dig.
 1-800-244-4444



Sheet No.	Scale	Area (Acres)
1	1" = 100'	1.00
2	1" = 100'	1.00
3	1" = 100'	1.00
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8	1" = 100'	1.00
9	1" = 100'	1.00
10	1" = 100'	1.00

COVER SHEET
 Heaven Hill 2 Site
 Meade District
 Marshall County, WV

DATE: 09/22/2017
 TIME: 10:28 AM
 PROJECT: HEAVEN HILL 2
 SHEET: 2X

09/22/2017

