



west virginia department of environmental protection

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

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

Wednesday, September 5, 2018
WELL WORK PERMIT
Horizontal 6A / New Drill

TUG HILL OPERATING, LLC
380 SOUTHPOINTE BOULEVARD, PLAZA II
SUITE 200
CANNONSBURG, PA 15317

Re: Permit approval for BRYAN N-13HU
47-051-02030-00-00

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: BRYAN N-13HU
Farm Name: CNX LAND RESOURCES INC.
U.S. WELL NUMBER: 47-051-02030-00-00
Horizontal 6A New Drill
Date Issued: 9/5/2018

PERMIT CONDITIONS

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

CONDITIONS

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

PERMIT CONDITIONS

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



west virginia department of environmental protection

Oil and Gas Conservation Commission
601 57th Street SE, Charleston, WV 25304
304-926-0499 Ext 1274

Barry K. Lay, Chairman
dep.wv.gov

July 26, 2018

Department of Environmental Protection
Office of Oil and Gas
Charleston, WV 25304

RE: Application for Deep Well Permit – API #47-051-02030

COMPANY: Tug Hill Operating, LLC

FARM: Bryan N-13HU

COUNTY: Marshall DISTRICT: Franklin QUAD: Powhatan Point

The deep well review of the application for the above company is **Approved to drill to the Trenton for Point Pleasant completion. Pooling Docket No. 265-254**

The applicant has complied with the provision of Chapter 22C-9, of the Code of West Virginia, nineteen hundred and thirty-one (1931), as amended, Oil and Gas Conservation Commission as follows:

1. Comments to Notice of Deviation filed? None
2. Provided a certified copy of duly acknowledged and recorded consent and easement form from all surface owners? yes
3. Provided a tabulation of all deep wells within one mile of the proposed location, including the API number of all deep wells: *yes, Docket 265-254 Exception Location Hearing, 47-051-02029 and 47-051-02031; and CORLEY N-9HU 47-051-01983 and CORLEY N-10HU 47-051-01998
4. Provided a plat showing that the proposed location is a distance of 400+ feet from the nearest lease line or unit boundary and showing the following wells drilled to or capable of producing from the objective formation within 3,000 feet of the proposed location.

Sincerely,

A handwritten signature in blue ink that reads 'Susan Rose'.

Susan Rose
Administrator

WW-6B
(04/15)

47 05 102030
API NO. 47-051
OPERATOR WELL NO. Bryan N-13HU
Well Pad Name: Bryan

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

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

2) Operator's Well Number: Bryan N-13HU Well Pad Name: Bryan

3) Farm Name/Surface Owner: CNX Land Resources, Inc. Public Road Access: Rines Ridge Rd

4) Elevation, current ground: 1254' Elevation, proposed post-construction: 1254'

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

(b) If Gas Shallow _____ Deep

Horizontal *JW4/6/18*

6) Existing Pad: Yes or No Yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Point Pleasant is the target formation at a depth of 11,124' - 11,243' thickness of 119' and anticipated pressure of approx. 9000 psi

8) Proposed Total Vertical Depth: 11,393'

9) Formation at Total Vertical Depth: Trenton

10) Proposed Total Measured Depth: 24,342'

11) Proposed Horizontal Leg Length: 12,319'

12) Approximate Fresh Water Strata Depths: 803'

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: 2040'

15) Approximate Coal Seam Depths: Sewickly Coal - 701' and Pittsburgh Coal - 796'

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

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

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4705102030

WW-6B
(04/15)

API NO. 47- 051
OPERATOR WELL NO. Bryan N-13HU
Well Pad Name: Bryan

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	100'	100'	216FT^3(CTS)
Fresh Water	20"	NEW	J55	106.5#	953'	953'	1,525ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	2,800'	2,800'	1,978ft^3(CTS)
Intermediate	9 5/8"	NEW	HPP110	47#	10,317'	10,317'	3,370ft^3(CTS)
Production	5 1/2"	NEW	HCP110	23#	24,342'	24,342'	5,752ft^3(CTS)
Tubing	2 7/8"	NEW	P110	6.5#		11,731'	
Liners							

JW4/6/18

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	20"	26"	.5	2,410	1,928	SEE #24	1.2
Coal	13 3/8"	17 1/2"	.38	2,740	2,192	SEE#24	1.2
Intermediate	9 5/8"	12 1/4"	.472	10,730	6,968	SEE#24	1.99
Production	5 1/2"	8 1/2"	.415	13,580	10,864	SEE#24	1.18
Tubing	2 7/8"			14,530	11,624		
Liners							

PACKERS

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

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09/07/2018

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WW-6B
(10/14)

API NO. 47-051 - 02030
OPERATOR WELL NO. Bryan N-13HU
Well Pad Name: Bryan

JWH/6/18

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

Drill through the Point Pleasant and TD Pilot Hole 150' into the Trenton. 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 30,797,500 lb proppant and 476,152 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 16.14

22) Area to be disturbed for well pad only, less access road (acres): 5.98

23) Describe centralizer placement for each casing string:

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

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

*See Attachment

25) Proposed borehole conditioning procedures:

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

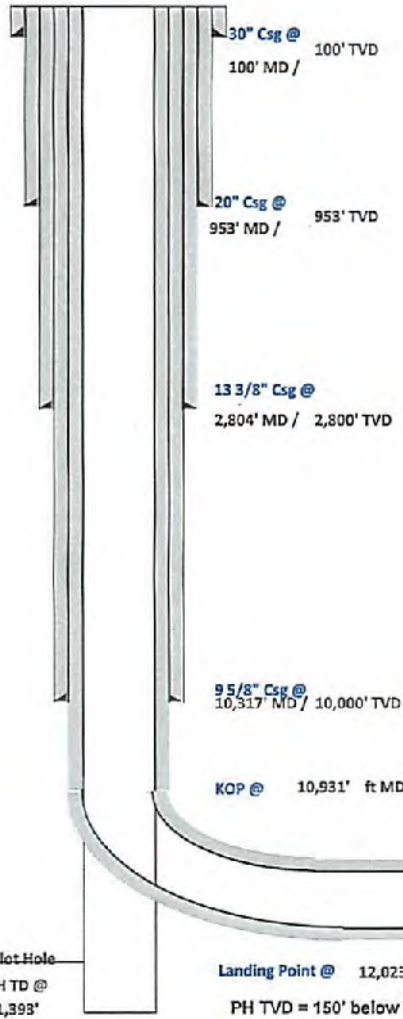
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*Note: Attach additional sheets as needed.



WELL NAME: Bryan N-13HU
 STATE: West Virginia COUNTY: Marshall
 DISTRICT: Franklin
 DF Elev: 1,191' GL Elev: 1,191'
 TD: 24,342'
 TH Latitude: 39.77561617
 TH Longitude: -80.77651946 39.80603048
 BH Latitude: -80.79241802



FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	803'
Sewickley Coal	701'
Pittsburgh Coal	795'
Big Lime	1,970'
Berea	2,519'
Tully	6,362'
Marcellus	6,443'
Onondaga	6,495'
Salina	7,185'
Lockport	8,211'
Utica	10,870'
Point Pleasant	11,124'
Landing Depth	11,200'
Trenton	11,248'
Pilot Hole TD	11,393'

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	100'	100'	BW	BW	Surface
Surface	26	20	953'	953'	106.5	J55	Surface
Intermediate 1	17 1/2	13 3/8	2,804'	2,800'	54.5	J55	Surface
Intermediate 2	12 1/4	9 5/8	10,317'	10,000'	47	HP110	Surface
Production	8 1/2	5 1/2	24,342'	10,770'	23	P110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	291	A	15.6	Air	None
Surface	1,657	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	2,147	A	15	Air	1 Centralizer every other jt
Intermediate 2	2,758	A	14.5	Air	1 Centralizer every other jt
Production	4,972	A	15	Air / SOBMs	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to s/c

gwh/6/18

Pilot Hole
PH TD @
11,393'

Landing Point @ 12,023' MD / 11,200' TVD
PH TVD = 150' below Trenton Top

Lateral TD @ 24,342' ft MD
10,770' ft TVD

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Tug Hill Operating, LLC Casing and Cement Program

Bryan N-13HU

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	100'	CTS
Surface	20"	J55	26"	953'	CTS
Intermediate 1	13 3/8"	J55	17 1/2"	2,804'	CTS
Intermediate 2	9 5/8"	HP110	12 1/4"	10,317'	CTS
Production	5 1/2"	P110	8 1/2"	24,342'	CTS

Cement

Surface: Premium NE-1 + 2% bwoc CaC12 + 46.5% Fresh Water – Surface Cement mixed at 15.6 ppg, Y=1.2

Intermediate 1: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.2

Intermediate 2: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.99

Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.18

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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

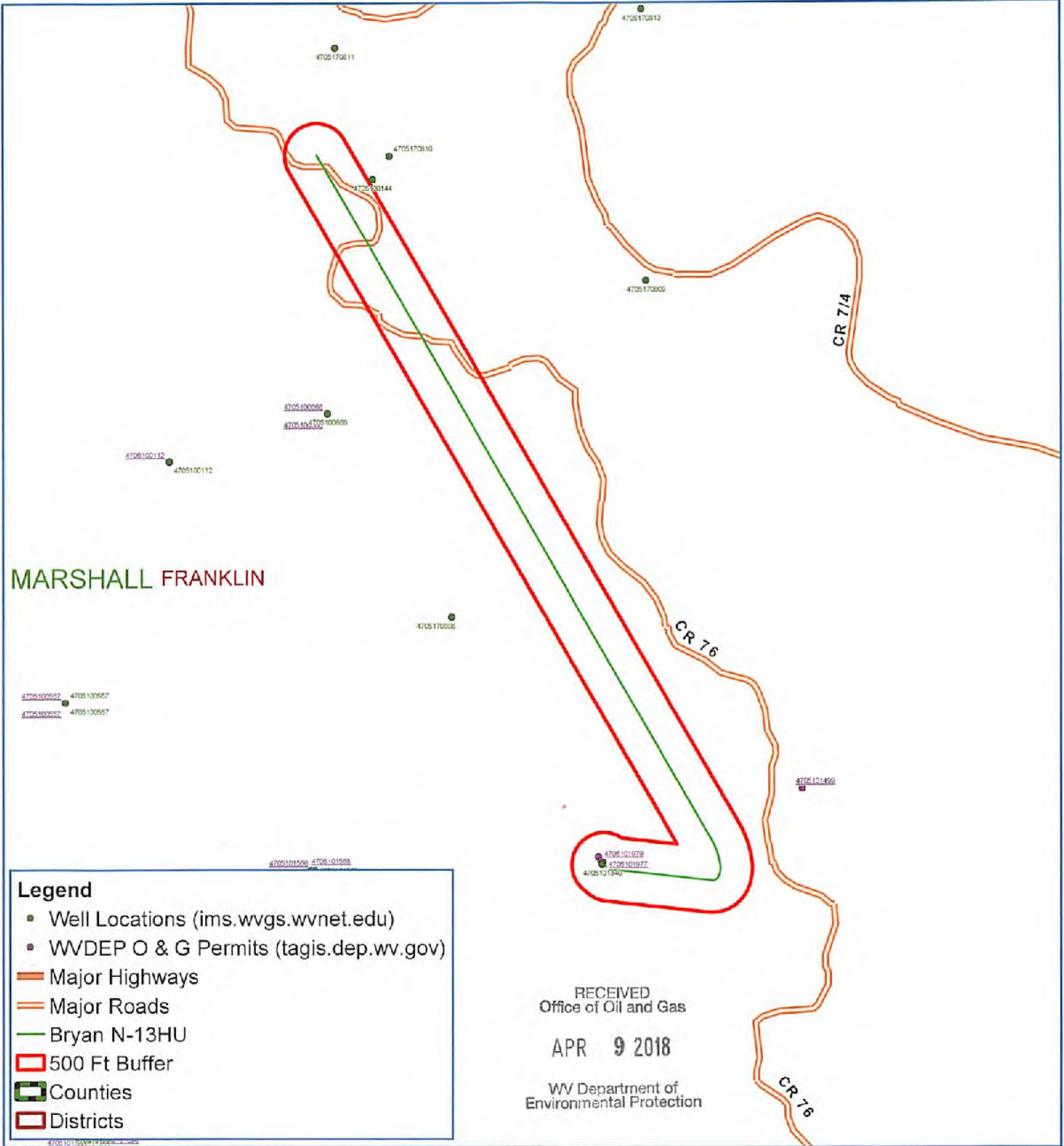
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MARSHALL FRANKLIN

Legend

- Well Locations (ims.wvgs.wvnet.edu)
- WVDEP O & G Permits (tagis.dep.wv.gov)
- Major Highways
- Major Roads
- Bryan N-13HU
- ▭ 500 Ft Buffer
- ▭ Counties
- ▭ Districts

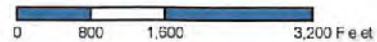
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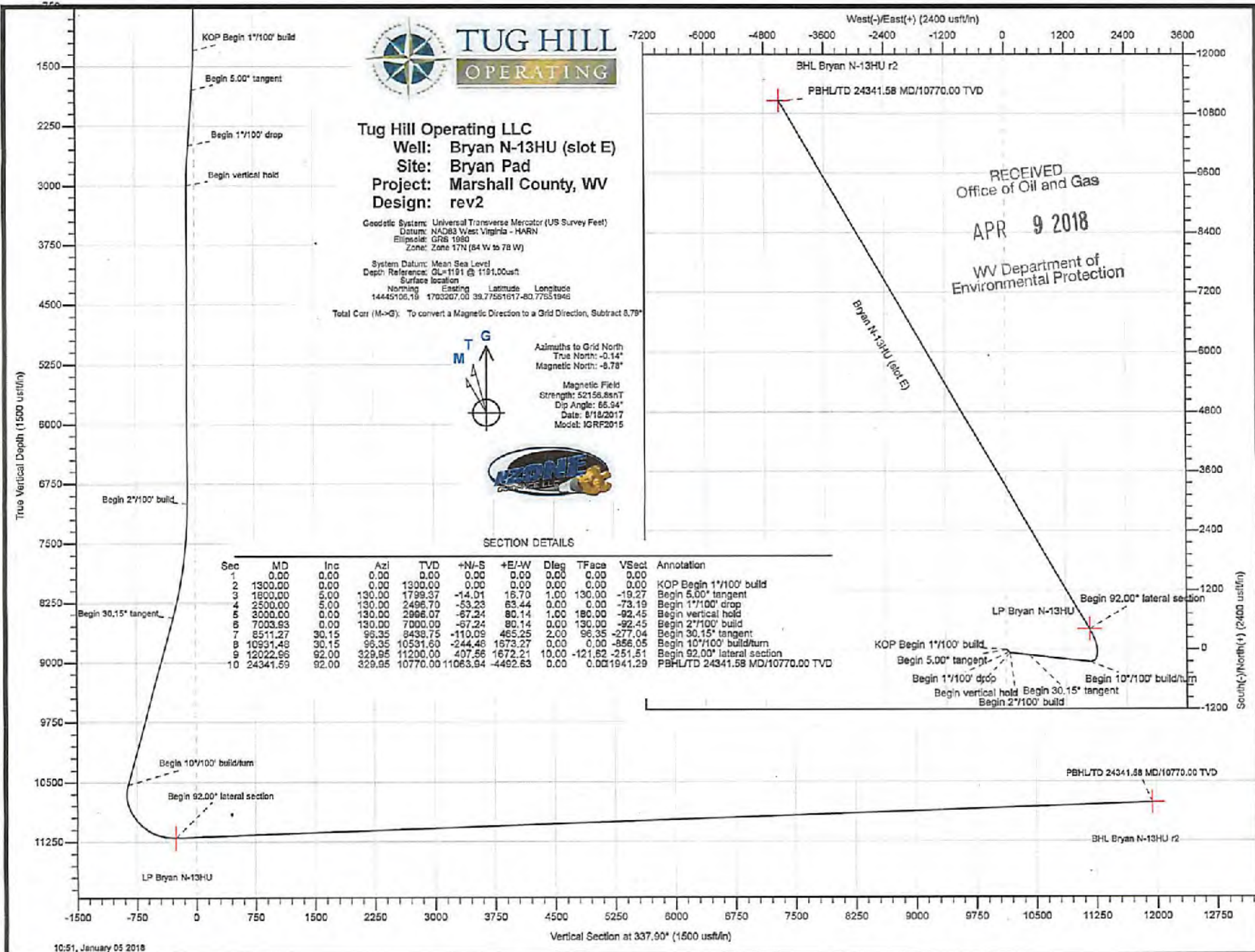


Bryan N-13HU Franklin District Marshall County, WV



Map Created: January 5, 2018
Map Current As Of: January 5, 2018

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



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51-02030



Planning Report - Geographic

Database:	DB_Jul2216dLv14	Local Co-ordinate Reference:	Well Bryan N-13HU (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1191 @ 1191.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-13HU (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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

Site	Bryan Pad				
Site Position:		Northing:	14,445,110.80 usft	Latitude:	39.77592900
From:	Lat/Long	Easting:	1,703,181.57 usft	Longitude:	-80.77690992
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.14 °

Well	Bryan N-13HU (slot E)					
Well Position	+N/-S	0.00 usft	Northing:	14,445,106.19 usft	Latitude:	39.77561617
	+E/-W	0.00 usft	Easting:	1,703,207.00 usft	Longitude:	-80.77651946
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	1,191.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/18/2017	-8.64	66.94	52,156.77745238

Design	rev2				
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	337.90	

Plan Survey Tool Program	Date 1/5/2018				
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	24,341.59 rev2 (Original Hole)	MWD MWD - Standard		

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Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Bryan N-13HU (slot E)
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Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-13HU (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	5.00	130.00	1,799.37	-14.01	16.70	1.00	1.00	0.00	130.00	
2,500.00	5.00	130.00	2,488.70	-53.23	63.44	0.00	0.00	0.00	0.00	
3,000.00	0.00	130.00	2,998.07	-67.24	80.14	1.00	-1.00	0.00	180.00	
7,003.93	0.00	130.00	7,000.00	-67.24	80.14	0.00	0.00	0.00	130.00	
8,511.27	30.15	96.35	8,438.75	-110.09	465.25	2.00	2.00	-2.23	96.35	
10,931.48	30.15	96.35	10,531.60	-244.48	1,673.27	0.00	0.00	0.00	0.00	
12,022.96	92.00	329.95	11,200.00	407.56	1,672.21	10.00	5.67	-11.58	-121.62	LP Bryan N-13HU
24,341.59	92.00	329.95	10,770.00	11,063.94	-4,492.63	0.00	0.00	0.00	0.00	BHL Bryan N-13HU r

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Planning Report - Geographic

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Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-13HU (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

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	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
100.00	0.00	0.00	100.00	0.00	0.00	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
200.00	0.00	0.00	200.00	0.00	0.00	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
300.00	0.00	0.00	300.00	0.00	0.00	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
400.00	0.00	0.00	400.00	0.00	0.00	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
500.00	0.00	0.00	500.00	0.00	0.00	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
600.00	0.00	0.00	600.00	0.00	0.00	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
700.00	0.00	0.00	700.00	0.00	0.00	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
800.00	0.00	0.00	800.00	0.00	0.00	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
900.00	0.00	0.00	900.00	0.00	0.00	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	14,445,106.19	1,703,207.00	39.77561617	-80.77651946	
KOP Begin 1°/100' build										
1,400.00	1.00	130.00	1,399.99	-0.56	0.67	14,445,105.63	1,703,207.67	39.77561463	-80.77651709	
1,500.00	2.00	130.00	1,499.96	-2.24	2.67	14,445,103.95	1,703,209.68	39.77560999	-80.77650996	
1,600.00	3.00	130.00	1,599.86	-5.05	6.02	14,445,101.14	1,703,213.02	39.77560227	-80.77649810	
1,700.00	4.00	130.00	1,699.66	-8.97	10.69	14,445,097.22	1,703,217.69	39.77559146	-80.77648149	
1,800.00	5.00	130.00	1,799.37	-14.01	16.70	14,445,092.17	1,703,223.70	39.77557757	-80.77646014	
Begin 5.00° tangent										
1,900.00	5.00	130.00	1,898.99	-19.62	23.38	14,445,086.57	1,703,230.38	39.77556214	-80.77643643	
2,000.00	5.00	130.00	1,998.60	-25.22	30.05	14,445,080.97	1,703,237.06	39.77554671	-80.77641272	
2,100.00	5.00	130.00	2,098.22	-30.82	36.73	14,445,075.37	1,703,243.73	39.77553128	-80.77638900	
2,200.00	5.00	130.00	2,197.84	-36.42	43.41	14,445,069.77	1,703,250.41	39.77551584	-80.77636529	
2,300.00	5.00	130.00	2,297.46	-42.03	50.08	14,445,064.16	1,703,257.09	39.77550041	-80.77634158	
2,400.00	5.00	130.00	2,397.08	-47.63	56.76	14,445,058.56	1,703,263.76	39.77548498	-80.77631786	
2,500.00	5.00	130.00	2,496.70	-53.23	63.44	14,445,052.96	1,703,270.44	39.77546955	-80.77629415	
Begin 1°/100' drop										
2,600.00	4.00	130.00	2,596.39	-58.27	69.45	14,445,047.92	1,703,276.45	39.77545566	-80.77627281	
2,700.00	3.00	130.00	2,696.20	-52.20	74.12	14,445,043.99	1,703,281.13	39.77544485	-80.77625820	
2,800.00	2.00	130.00	2,796.11	-45.00	77.47	14,445,041.19	1,703,284.47	39.77543713	-80.77624433	
2,900.00	1.00	130.00	2,896.07	-36.68	79.47	14,445,039.51	1,703,286.47	39.77543249	-80.77623721	
3,000.00	0.00	130.00	2,996.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
Begin vertical hold										
3,100.00	0.00	0.00	3,096.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
3,200.00	0.00	130.00	3,196.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
3,300.00	0.00	0.00	3,296.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
3,400.00	0.00	0.00	3,396.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
3,500.00	0.00	0.00	3,496.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
3,600.00	0.00	130.00	3,596.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
3,700.00	0.00	0.00	3,696.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
3,800.00	0.00	0.00	3,796.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
3,900.00	0.00	130.00	3,896.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
4,000.00	0.00	130.00	3,996.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
4,100.00	0.00	0.00	4,096.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
4,200.00	0.00	130.00	4,196.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
4,300.00	0.00	0.00	4,296.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
4,400.00	0.00	130.00	4,396.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
4,500.00	0.00	0.00	4,496.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
4,600.00	0.00	130.00	4,596.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
4,700.00	0.00	0.00	4,696.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
4,800.00	0.00	130.00	4,796.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
4,900.00	0.00	130.00	4,896.07	-27.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	

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Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Bryan N-13HU (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1191 @ 1191.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-13HU (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,000.00	0.00	0.00	4,998.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
5,100.00	0.00	0.00	5,096.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
5,200.00	0.00	130.00	5,196.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
5,300.00	0.00	0.00	5,296.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
5,400.00	0.00	0.00	5,396.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
5,500.00	0.00	0.00	5,496.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
5,600.00	0.00	130.00	5,596.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
5,700.00	0.00	0.00	5,696.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
5,800.00	0.00	0.00	5,796.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
5,900.00	0.00	130.00	5,896.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
6,000.00	0.00	130.00	5,996.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
6,100.00	0.00	0.00	6,096.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
6,200.00	0.00	130.00	6,196.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
6,300.00	0.00	0.00	6,296.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
6,400.00	0.00	130.00	6,396.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
6,500.00	0.00	0.00	6,496.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
6,600.00	0.00	130.00	6,596.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
6,700.00	0.00	0.00	6,696.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
6,800.00	0.00	130.00	6,796.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
6,900.00	0.00	130.00	6,896.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
7,000.00	0.00	0.00	6,996.07	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
7,003.93	0.00	0.00	7,000.00	-67.24	80.14	14,445,038.94	1,703,287.14	39.77543095	-80.77623483	
Begin 2"100' build										
7,100.00	1.92	96.35	7,096.05	-67.42	81.74	14,445,038.77	1,703,286.74	39.77543045	-80.77622914	
7,200.00	3.92	96.35	7,195.91	-67.99	86.81	14,445,038.20	1,703,293.81	39.77542887	-80.77621111	
7,300.00	5.92	96.35	7,295.54	-68.84	95.33	14,445,037.25	1,703,302.33	39.77542620	-80.77618078	
7,400.00	7.92	96.35	7,394.81	-70.27	107.31	14,445,035.92	1,703,314.31	39.77542246	-80.77613817	
7,500.00	9.92	96.35	7,493.59	-71.98	122.72	14,445,034.21	1,703,329.72	39.77541765	-80.77608333	
7,600.00	11.92	96.35	7,591.78	-74.08	141.55	14,445,032.11	1,703,348.55	39.77541177	-80.77601833	
7,700.00	13.92	96.35	7,689.24	-76.55	163.77	14,445,029.64	1,703,370.77	39.77540482	-80.77593726	
7,800.00	15.92	96.35	7,785.86	-79.40	189.36	14,445,028.79	1,703,396.36	39.77539893	-80.77584621	
7,900.00	17.92	96.35	7,881.53	-82.61	218.29	14,445,028.58	1,703,425.29	39.77538779	-80.77574328	
8,000.00	19.92	96.35	7,976.12	-86.20	250.51	14,445,019.99	1,703,457.52	39.77537772	-80.77562862	
8,100.00	21.92	96.35	8,069.52	-90.15	286.00	14,445,016.04	1,703,493.00	39.77536664	-80.77550235	
8,200.00	23.92	96.35	8,161.62	-94.45	324.71	14,445,011.74	1,703,531.71	39.77535455	-80.77536463	
8,300.00	25.92	96.35	8,252.31	-99.11	366.56	14,445,007.08	1,703,573.59	39.77534146	-80.77521562	
8,400.00	27.92	96.35	8,341.46	-104.12	411.56	14,445,002.07	1,703,618.58	39.77532740	-80.77505552	
8,500.00	29.92	96.35	8,428.99	-109.47	459.84	14,444,996.72	1,703,666.65	39.77531239	-80.77488451	
8,511.27	30.15	96.35	8,433.74	-110.09	465.25	14,444,996.10	1,703,672.25	39.77531054	-80.77486456	
Begin 30.15° tangent										
8,600.00	30.15	96.35	8,515.47	-115.02	509.54	14,444,991.17	1,703,716.54	39.77529690	-80.77470698	
8,700.00	30.15	96.35	8,601.95	-120.57	559.45	14,444,985.62	1,703,766.45	39.77528120	-80.77452938	
8,800.00	30.15	96.35	8,688.42	-126.12	609.37	14,444,980.07	1,703,816.37	39.77526561	-80.77435170	
8,900.00	30.15	96.35	8,774.90	-131.68	659.28	14,444,974.51	1,703,866.28	39.77525001	-80.77417418	
9,000.00	30.15	96.35	8,861.37	-137.23	709.19	14,444,968.96	1,703,916.20	39.77523442	-80.77399658	
9,100.00	30.15	96.35	8,947.84	-142.78	759.11	14,444,963.41	1,703,966.11	39.77521882	-80.77381899	
9,200.00	30.15	96.35	9,034.32	-148.33	809.02	14,444,957.86	1,704,016.02	39.77520323	-80.77364139	
9,300.00	30.15	96.35	9,120.79	-153.88	858.93	14,444,952.30	1,704,065.94	39.77518763	-80.77346379	
9,400.00	30.15	96.35	9,207.27	-159.44	908.85	14,444,946.75	1,704,115.85	39.77517203	-80.77328619	
9,500.00	30.15	96.35	9,293.74	-164.99	958.76	14,444,941.20	1,704,165.76	39.77515643	-80.77310859	
9,600.00	30.15	96.35	9,380.21	-170.55	1,008.68	14,444,935.64	1,704,215.68	39.77514084	-80.77293099	
9,700.00	30.15	96.35	9,466.69	-176.10	1,058.59	14,444,930.09	1,704,265.59	39.77512524	-80.77275340	
9,800.00	30.15	96.35	9,553.16	-181.65	1,108.50	14,444,924.54	1,704,315.51	39.77510964	-80.77257580	
9,900.00	30.15	96.35	9,639.64	-187.20	1,158.42	14,444,918.98	1,704,365.42	39.77509404	-80.77239820	

09/07/2018

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WV Department of
Environmental Protection



Planning Report - Geographic

Database:	DB_Jul2216d_v14	Local Co-ordinate Reference:	Well Bryan N-13HU (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1191 @ 1191.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-13HU (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
10,000.00	30.15	96.35	9,726.11	-192.78	1,208.33	14,444,913.43	1,704,415.33	39.77507844	-80.77222060	
10,100.00	30.15	96.35	9,812.59	-198.31	1,258.24	14,444,807.88	1,704,465.25	39.77506285	-80.77204300	
10,200.00	30.15	96.35	9,899.06	-203.86	1,308.16	14,444,802.33	1,704,515.16	39.77504725	-80.77186541	
10,300.00	30.15	96.35	9,985.53	-209.42	1,358.07	14,444,896.77	1,704,565.07	39.77503165	-80.77168781	
10,400.00	30.15	96.35	10,072.01	-214.97	1,407.99	14,444,891.22	1,704,614.99	39.77501805	-80.77151021	
10,500.00	30.15	96.35	10,158.48	-220.52	1,457.90	14,444,885.67	1,704,664.90	39.77500045	-80.77133261	
10,600.00	30.15	96.35	10,244.96	-226.08	1,507.81	14,444,880.11	1,704,714.82	39.77498485	-80.77115502	
10,700.00	30.15	96.35	10,331.43	-231.63	1,557.73	14,444,874.56	1,704,764.73	39.77496925	-80.77097742	
10,800.00	30.15	96.35	10,417.90	-237.18	1,607.64	14,444,868.01	1,704,814.64	39.77495365	-80.77079982	
10,900.00	30.15	96.35	10,504.38	-242.73	1,657.55	14,444,863.45	1,704,864.56	39.77493805	-80.77062223	
10,931.48	30.15	96.35	10,531.60	-244.48	1,673.27	14,444,861.71	1,704,880.27	39.77493313	-80.77056632	
Begin 10°/100' build/turn										
11,000.00	27.13	83.48	10,591.79	-244.61	1,705.93	14,444,861.58	1,704,912.93	39.77493255	-80.77045008	
11,100.00	25.32	61.09	10,681.71	-231.65	1,747.40	14,444,874.54	1,704,954.41	39.77496786	-80.77030234	
11,200.00	27.07	38.69	10,771.66	-203.47	1,780.42	14,444,902.72	1,704,987.42	39.77504500	-80.77018457	
11,300.00	31.80	20.62	10,858.90	-160.94	1,803.98	14,444,945.25	1,705,010.98	39.77516186	-80.77010034	
11,400.00	38.42	7.52	10,940.77	-105.33	1,817.36	14,445,000.86	1,705,024.36	39.77531427	-80.77005221	
11,500.00	46.11	357.97	11,014.80	-38.35	1,820.16	14,445,067.84	1,705,027.16	39.77549620	-80.77004164	
11,600.00	54.41	350.69	11,078.73	37.98	1,812.28	14,445,144.17	1,705,019.29	39.77570787	-80.77006896	
11,700.00	63.06	344.81	11,130.62	121.33	1,793.99	14,445,227.52	1,705,000.98	39.77593690	-80.77013334	
11,800.00	71.92	339.78	11,168.89	209.17	1,766.81	14,445,315.36	1,704,972.81	39.77617834	-80.77023282	
11,900.00	80.89	335.25	11,192.39	298.83	1,728.52	14,445,405.02	1,704,935.62	39.77642484	-80.77036437	
12,000.00	89.92	330.93	11,200.39	367.59	1,683.54	14,445,493.78	1,704,890.54	39.77668892	-80.77052400	
12,022.96	92.00	329.95	11,200.00	407.56	1,672.21	14,445,513.75	1,704,879.22	39.77672383	-80.77056413	
Begin 92.00° lateral section										
12,100.00	92.00	329.95	11,197.31	474.21	1,633.66	14,445,580.39	1,704,840.66	39.77690713	-80.77070074	
12,200.00	92.00	329.95	11,193.82	560.71	1,583.61	14,445,666.90	1,704,790.62	39.77714505	-80.77087607	
12,300.00	92.00	329.95	11,180.33	647.22	1,533.57	14,445,753.41	1,704,740.57	39.77738297	-80.77105541	
12,400.00	92.00	329.95	11,166.84	733.72	1,483.52	14,445,839.91	1,704,690.53	39.77762089	-80.77123274	
12,500.00	92.00	329.95	11,153.35	820.23	1,433.48	14,445,926.42	1,704,640.48	39.77785881	-80.77141007	
12,600.00	92.00	329.95	11,139.86	906.74	1,383.43	14,446,012.93	1,704,590.44	39.77809674	-80.77158741	
12,700.00	92.00	329.95	11,126.37	993.24	1,333.39	14,446,099.43	1,704,540.39	39.77833466	-80.77176475	
12,800.00	92.00	329.95	11,112.88	1,079.75	1,283.34	14,446,185.94	1,704,490.35	39.77857258	-80.77194209	
12,900.00	92.00	329.95	11,169.39	1,166.25	1,233.30	14,446,272.44	1,704,440.30	39.77881050	-80.77211943	
13,000.00	92.00	329.95	11,165.90	1,252.76	1,183.25	14,446,358.95	1,704,390.26	39.77904842	-80.77229677	
13,100.00	92.00	329.95	11,162.40	1,339.27	1,133.21	14,446,445.46	1,704,340.21	39.77928634	-80.77247411	
13,200.00	92.00	329.95	11,158.91	1,425.77	1,083.16	14,446,531.96	1,704,290.17	39.77952425	-80.77265146	
13,300.00	92.00	329.95	11,155.42	1,512.28	1,033.12	14,446,618.47	1,704,240.12	39.77976217	-80.77282880	
13,400.00	92.00	329.95	11,151.93	1,598.79	983.07	14,446,704.98	1,704,190.08	39.78000009	-80.77300615	
13,500.00	92.00	329.95	11,148.44	1,685.29	933.03	14,446,791.48	1,704,140.03	39.78023601	-80.77318350	
13,600.00	92.00	329.95	11,144.95	1,771.80	882.98	14,446,877.99	1,704,089.99	39.78047593	-80.77336084	
13,700.00	92.00	329.95	11,141.46	1,858.30	832.94	14,446,964.49	1,704,039.94	39.78071585	-80.77353819	
13,800.00	92.00	329.95	11,137.97	1,944.81	782.90	14,447,051.00	1,703,989.90	39.78095576	-80.77371555	
13,900.00	92.00	329.95	11,134.48	2,031.32	732.85	14,447,137.51	1,703,939.85	39.78119568	-80.77389290	
14,000.00	92.00	329.95	11,130.99	2,117.82	682.81	14,447,224.01	1,703,889.81	39.78143560	-80.77407025	
14,100.00	92.00	329.95	11,127.50	2,204.33	632.76	14,447,310.52	1,703,839.76	39.78167551	-80.77424761	
14,200.00	92.00	329.95	11,124.01	2,290.84	582.72	14,447,397.02	1,703,789.72	39.78191543	-80.77442496	
14,300.00	92.00	329.95	11,120.52	2,377.34	532.67	14,447,483.53	1,703,739.67	39.78215535	-80.77460232	
14,400.00	92.00	329.95	11,117.03	2,463.85	482.63	14,447,570.04	1,703,689.63	39.78239526	-80.77477968	
14,500.00	92.00	329.95	11,113.54	2,550.35	432.58	14,447,656.54	1,703,639.58	39.78263518	-80.77495704	
14,600.00	92.00	329.95	11,110.04	2,636.86	382.54	14,447,743.05	1,703,589.54	39.78287509	-80.77513440	
14,700.00	92.00	329.95	11,106.55	2,723.37	332.49	14,447,829.56	1,703,539.49	39.78309301	-80.77531176	
14,800.00	92.00	329.95	11,103.06	2,809.87	282.45	14,447,916.06	1,703,489.45	39.78333092	-80.77548912	
14,900.00	92.00	329.95	11,099.57	2,896.38	232.40	14,448,002.57	1,703,439.40	39.78356884	-80.77566649	

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WV Department of
Environmental Protection



Planning Report - Geographic

Database:	DB_Jul2216dL_v14	Local Co-ordinate Reference:	Well Bryan N-13HU (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1191 @ 1191.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-13HU (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
15,000.00	92.00	329.95	11,096.09	2,902.89	102.35	14,448,089.07	1,703,389.36	39.78380675	-80.77584385	
15,100.00	92.00	329.95	11,092.59	3,069.39	132.31	14,448,175.58	1,703,339.31	39.78404466	-80.77602122	
15,200.00	92.00	329.95	11,089.10	3,155.90	82.27	14,448,262.09	1,703,289.27	39.78428258	-80.77619859	
15,300.00	92.00	329.95	11,085.61	3,242.40	32.22	14,448,348.59	1,703,239.22	39.78452049	-80.77637596	
15,400.00	92.00	329.95	11,082.12	3,328.91	-17.82	14,448,435.10	1,703,189.18	39.78475840	-80.77655333	
15,500.00	92.00	329.95	11,078.63	3,415.42	-67.87	14,448,521.61	1,703,139.13	39.78499632	-80.77673070	
15,600.00	92.00	329.95	11,075.14	3,501.92	-117.91	14,448,608.11	1,703,089.09	39.78523423	-80.77690808	
15,700.00	92.00	329.95	11,071.65	3,588.43	-167.95	14,448,694.62	1,703,039.05	39.78547214	-80.77708545	
15,800.00	92.00	329.95	11,068.16	3,674.94	-218.00	14,448,781.12	1,702,989.00	39.78571005	-80.77726283	
15,900.00	92.00	329.95	11,064.67	3,761.44	-268.05	14,448,867.63	1,702,938.96	39.78594796	-80.77744020	
16,000.00	92.00	329.95	11,061.18	3,847.95	-318.09	14,448,954.14	1,702,888.91	39.78618588	-80.77761758	
16,100.00	92.00	329.95	11,057.69	3,934.45	-368.14	14,449,040.64	1,702,838.87	39.78642379	-80.77779496	
16,200.00	92.00	329.95	11,054.19	4,020.96	-418.18	14,449,127.15	1,702,788.82	39.78666170	-80.77797234	
16,300.00	92.00	329.95	11,050.70	4,107.47	-468.23	14,449,213.66	1,702,738.78	39.78689961	-80.77814972	
16,400.00	92.00	329.95	11,047.21	4,193.97	-518.27	14,449,300.16	1,702,688.73	39.78713752	-80.77832710	
16,500.00	92.00	329.95	11,043.72	4,280.48	-568.32	14,449,386.67	1,702,638.69	39.78737543	-80.77850449	
16,600.00	92.00	329.95	11,040.23	4,366.99	-618.36	14,449,473.17	1,702,588.64	39.78761334	-80.77868187	
16,700.00	92.00	329.95	11,036.74	4,453.49	-668.41	14,449,559.68	1,702,538.60	39.78785125	-80.77885926	
16,800.00	92.00	329.95	11,033.25	4,540.00	-718.45	14,449,646.19	1,702,488.55	39.78808916	-80.77903665	
16,900.00	92.00	329.95	11,029.76	4,626.50	-768.50	14,449,732.69	1,702,438.51	39.78832706	-80.77921404	
17,000.00	92.00	329.95	11,026.27	4,713.01	-818.54	14,449,819.20	1,702,388.46	39.78856497	-80.77939143	
17,100.00	92.00	329.95	11,022.78	4,799.52	-868.59	14,449,905.71	1,702,338.42	39.78880288	-80.77956882	
17,200.00	92.00	329.95	11,019.29	4,886.02	-918.63	14,449,992.21	1,702,288.37	39.78904079	-80.77974621	
17,300.00	92.00	329.95	11,015.80	4,972.53	-968.68	14,450,078.72	1,702,238.33	39.78927870	-80.77992361	
17,400.00	92.00	329.95	11,012.31	5,059.03	-1,018.72	14,450,165.22	1,702,188.28	39.78951660	-80.78010100	
17,500.00	92.00	329.95	11,008.82	5,145.54	-1,068.77	14,450,251.73	1,702,138.24	39.78975451	-80.78027840	
17,600.00	92.00	329.95	11,005.33	5,232.05	-1,118.81	14,450,338.24	1,702,088.19	39.78999242	-80.78045579	
17,700.00	92.00	329.95	11,001.83	5,318.55	-1,168.86	14,450,424.74	1,702,038.15	39.79023033	-80.78063319	
17,800.00	92.00	329.95	10,998.34	5,405.06	-1,218.90	14,450,511.25	1,701,988.10	39.79046823	-80.78081059	
17,900.00	92.00	329.95	10,994.85	5,491.57	-1,268.94	14,450,597.76	1,701,938.06	39.79070614	-80.78098799	
18,000.00	92.00	329.95	10,991.36	5,578.07	-1,318.99	14,450,684.26	1,701,888.01	39.79094404	-80.78116540	
18,100.00	92.00	329.95	10,987.87	5,664.58	-1,369.03	14,450,770.77	1,701,837.97	39.79118195	-80.78134280	
18,200.00	92.00	329.95	10,984.38	5,751.08	-1,419.08	14,450,857.27	1,701,787.92	39.79141985	-80.78152020	
18,300.00	92.00	329.95	10,980.89	5,837.59	-1,469.12	14,450,943.78	1,701,737.88	39.79165776	-80.78169761	
18,400.00	92.00	329.95	10,977.40	5,924.10	-1,519.17	14,451,030.29	1,701,687.83	39.79189566	-80.78187502	
18,500.00	92.00	329.95	10,973.91	6,010.60	-1,569.21	14,451,116.79	1,701,637.79	39.79213357	-80.78205243	
18,600.00	92.00	329.95	10,970.42	6,097.11	-1,619.26	14,451,203.30	1,701,587.74	39.79237147	-80.78222984	
18,700.00	92.00	329.95	10,966.93	6,183.62	-1,669.30	14,451,289.80	1,701,537.70	39.79260938	-80.78240725	
18,800.00	92.00	329.95	10,963.44	6,270.12	-1,719.35	14,451,376.31	1,701,487.65	39.79284728	-80.78258466	
18,900.00	92.00	329.95	10,959.95	6,356.63	-1,769.39	14,451,462.82	1,701,437.61	39.79308518	-80.78276207	
19,000.00	92.00	329.95	10,956.46	6,443.13	-1,819.44	14,451,549.32	1,701,387.56	39.79332309	-80.78293949	
19,100.00	92.00	329.95	10,952.97	6,529.64	-1,869.48	14,451,635.83	1,701,337.52	39.79356099	-80.78311690	
19,200.00	92.00	329.95	10,949.48	6,616.15	-1,919.53	14,451,722.34	1,701,287.47	39.79379890	-80.78329432	
19,300.00	92.00	329.95	10,945.99	6,702.65	-1,969.57	14,451,808.84	1,701,237.43	39.79403679	-80.78347174	
19,400.00	92.00	329.95	10,942.50	6,789.16	-2,019.62	14,451,895.35	1,701,187.38	39.79427469	-80.78364916	
19,500.00	92.00	329.95	10,939.00	6,875.67	-2,069.66	14,451,981.85	1,701,137.34	39.79451260	-80.78382658	
19,600.00	92.00	329.95	10,935.51	6,962.17	-2,119.71	14,452,068.36	1,701,087.29	39.79475050	-80.78400400	
19,700.00	92.00	329.95	10,932.02	7,048.68	-2,169.75	14,452,154.87	1,701,037.25	39.79498840	-80.78418142	
19,800.00	92.00	329.95	10,928.53	7,135.18	-2,219.80	14,452,241.37	1,700,987.21	39.79522630	-80.78435883	
19,900.00	92.00	329.95	10,925.04	7,221.69	-2,269.84	14,452,327.88	1,700,937.16	39.79546420	-80.78453625	
20,000.00	92.00	329.95	10,921.55	7,308.20	-2,319.89	14,452,414.39	1,700,887.12	39.79570210	-80.78471367	
20,100.00	92.00	329.95	10,918.06	7,394.70	-2,369.93	14,452,500.89	1,700,837.07	39.79594000	-80.78489109	
20,200.00	92.00	329.95	10,914.57	7,481.21	-2,419.98	14,452,587.40	1,700,787.03	39.79617790	-80.78506851	
20,300.00	92.00	329.95	10,911.08	7,567.72	-2,470.02	14,452,673.90	1,700,736.99	39.79641580	-80.78524593	
20,400.00	92.00	329.95	10,907.59	7,654.22	-2,520.07	14,452,760.41	1,700,686.94	39.79665370	-80.78542334	

09/07/2018



Planning Report - Geographic

Database:	DB_Jul2216dt_V14	Local Co-ordinate Reference:	Well Bryan N-13HU (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1191 @ 1191.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-13HU (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
20,500.00	92.00	329.95	10,904.10	7,740.73	-2,570.11	14,452,846.92	1,700,636.89	39.78689180	-80.78560085	
20,600.00	92.00	329.95	10,900.61	7,827.23	-2,620.16	14,452,933.42	1,700,588.85	39.79712950	-80.78577829	
20,700.00	92.00	329.95	10,897.12	7,913.74	-2,670.20	14,453,019.93	1,700,536.80	39.79736739	-80.78595572	
20,800.00	92.00	329.95	10,893.62	8,000.25	-2,720.25	14,453,106.44	1,700,486.76	39.79760529	-80.78613316	
20,900.00	92.00	329.95	10,890.13	8,086.75	-2,770.29	14,453,192.94	1,700,436.71	39.79784319	-80.78631060	
21,000.00	92.00	329.95	10,886.64	8,173.26	-2,820.34	14,453,279.45	1,700,386.67	39.79808109	-80.78648804	
21,100.00	92.00	329.95	10,883.15	8,259.78	-2,870.38	14,453,365.95	1,700,336.62	39.79831898	-80.78666548	
21,200.00	92.00	329.95	10,879.66	8,346.27	-2,920.43	14,453,452.46	1,700,286.58	39.79855688	-80.78684292	
21,300.00	92.00	329.95	10,876.17	8,432.78	-2,970.47	14,453,538.97	1,700,236.53	39.79879478	-80.78702036	
21,400.00	92.00	329.95	10,872.68	8,519.28	-3,020.52	14,453,625.47	1,700,186.49	39.79903267	-80.78719780	
21,500.00	92.00	329.95	10,869.19	8,605.79	-3,070.56	14,453,711.98	1,700,136.44	39.79927057	-80.78737525	
21,600.00	92.00	329.95	10,865.70	8,692.30	-3,120.61	14,453,798.49	1,700,086.40	39.79950847	-80.78755270	
21,700.00	92.00	329.95	10,862.21	8,778.80	-3,170.65	14,453,884.99	1,700,036.35	39.79974636	-80.78773014	
21,800.00	92.00	329.95	10,858.72	8,865.31	-3,220.70	14,453,971.50	1,699,986.31	39.79998426	-80.78790759	
21,900.00	92.00	329.95	10,855.23	8,951.81	-3,270.74	14,454,058.00	1,699,936.26	39.80022215	-80.78808504	
22,000.00	92.00	329.95	10,851.74	9,038.32	-3,320.78	14,454,144.51	1,699,886.22	39.80046005	-80.78826249	
22,100.00	92.00	329.95	10,848.25	9,124.83	-3,370.83	14,454,231.02	1,699,836.17	39.80069794	-80.78843995	
22,200.00	92.00	329.95	10,844.76	9,211.33	-3,420.87	14,454,317.52	1,699,786.13	39.80093583	-80.78861740	
22,300.00	92.00	329.95	10,841.26	9,297.84	-3,470.92	14,454,404.03	1,699,736.08	39.80117373	-80.78879485	
22,400.00	92.00	329.95	10,837.77	9,384.35	-3,520.96	14,454,490.53	1,699,686.04	39.80141162	-80.78897231	
22,500.00	92.00	329.95	10,834.28	9,470.85	-3,571.01	14,454,577.04	1,699,635.99	39.80164951	-80.78914977	
22,600.00	92.00	329.95	10,830.79	9,557.36	-3,621.05	14,454,663.55	1,699,585.95	39.80188741	-80.78932723	
22,700.00	92.00	329.95	10,827.30	9,643.86	-3,671.10	14,454,750.05	1,699,535.90	39.80212530	-80.78950469	
22,800.00	92.00	329.95	10,823.81	9,730.37	-3,721.14	14,454,836.56	1,699,485.86	39.80236319	-80.78968215	
22,900.00	92.00	329.95	10,820.32	9,816.88	-3,771.19	14,454,923.07	1,699,435.81	39.80260108	-80.78985961	
23,000.00	92.00	329.95	10,816.83	9,903.38	-3,821.23	14,455,009.57	1,699,385.77	39.80283896	-80.78903707	
23,100.00	92.00	329.95	10,813.34	9,989.89	-3,871.28	14,455,096.08	1,699,335.72	39.80307687	-80.79021454	
23,200.00	92.00	329.95	10,809.85	10,076.40	-3,921.32	14,455,182.58	1,699,285.68	39.80331476	-80.79039200	
23,300.00	92.00	329.95	10,806.36	10,162.90	-3,971.37	14,455,269.09	1,699,235.63	39.80355265	-80.79056947	
23,400.00	92.00	329.95	10,802.87	10,249.41	-4,021.41	14,455,355.59	1,699,185.59	39.80379054	-80.79074694	
23,500.00	92.00	329.95	10,799.38	10,335.91	-4,071.46	14,455,442.10	1,699,135.54	39.80402843	-80.79092441	
23,600.00	92.00	329.95	10,795.89	10,422.42	-4,121.50	14,455,528.61	1,699,085.50	39.80426632	-80.79110188	
23,700.00	92.00	329.95	10,792.40	10,508.93	-4,171.55	14,455,615.12	1,699,035.45	39.80450421	-80.79127935	
23,800.00	92.00	329.95	10,788.91	10,595.43	-4,221.59	14,455,701.62	1,698,985.41	39.80474210	-80.79145682	
23,900.00	92.00	329.95	10,785.41	10,681.94	-4,271.64	14,455,788.13	1,698,935.37	39.80497999	-80.79163430	
24,000.00	92.00	329.95	10,781.92	10,768.45	-4,321.68	14,455,874.63	1,698,885.32	39.80521788	-80.79181177	
24,100.00	92.00	329.95	10,778.43	10,854.95	-4,371.73	14,455,961.14	1,698,835.28	39.80545577	-80.79198925	
24,200.00	92.00	329.95	10,774.94	10,941.46	-4,421.77	14,456,047.65	1,698,785.23	39.80569366	-80.79216673	
24,300.00	92.00	329.95	10,771.45	11,027.96	-4,471.82	14,456,134.15	1,698,735.19	39.80593155	-80.79234421	
24,341.59	92.00	329.95	10,770.00	11,063.93	-4,492.83	14,456,170.12	1,698,714.38	39.80603046	-80.79241800	
PBHL/TD 24341.58 MD/10770.00 TVD										
24,341.59	92.00	329.95	10,770.00	11,063.94	-4,492.83	14,456,170.13	1,698,714.37	39.80603048	-80.79241802	

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Environmental Protection



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Bryan N-13HU (slot E)
Company:	Tug Hill Operating LLC	TVD Reference:	GL=1191 @ 1191.00usft
Project:	Marshall County, West Virginia	MD Reference:	GL=1191 @ 1191.00usft
Site:	Bryan Pad	North Reference:	Grid
Well:	Bryan N-13HU (slot E)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev2		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
BHL Bryan N-13HU r2	0.00	0.00	10,770.00	11,063.94	-4,492.63	14,458,170.13	1,698,714.37	39.80603048	-80.79241802
- plan hits target center									
- Point									
LP Bryan N-13HU	0.00	0.00	11,200.00	407.56	1,672.21	14,445,513.75	1,704,879.21	39.77672384	-80.77056413
- plan hits target center									
- Point									

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N-S (usft)	+E-W (usft)	
1,300.00	1,300.00	0.00	0.00	KOP Begin 1°/100' build
1,800.00	1,799.37	-14.01	16.70	Begin 5.00° tangent
2,500.00	2,499.70	-53.23	63.44	Begin 1°/100' drop
3,000.00	2,999.07	-67.24	80.14	Begin vertical hold
7,003.93	7,000.00	-67.24	80.14	Begin 2°/100' build
8,511.27	8,439.74	-110.09	465.25	Begin 30.15° tangent
10,931.48	10,531.60	-244.48	1,673.27	Begin 10°/100' build/turn
12,022.98	11,200.00	407.56	1,672.21	Begin 92.00° lateral section
24,341.58	10,770.00	11,063.93	-4,492.63	PBHL/TD 24341.58 MD/10770.00 TVD

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Environmental Protection

47 05 102030

WW-9
(4/16)

API Number 47 - 051 - _____
Operator's Well No. Bryan N-13HU

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 - Ohio River (Undefined) Quadrangle Powhatan Point 7.5'

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

Will a pit be used? Yes No

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

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

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 _____

Company Official (Typed Name) David Patterson

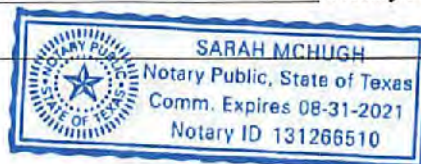
Company Official Title Senior Vice President, Operations

Subscribed and sworn before me this 12th day of December, 20 17

Sarah Mchugh

Notary Public

My commission expires 08-31-2021



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09/07/2018

51-02030

Form WW-9

Operator's Well No. Bryan N-13HU

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 17.78 Prevegetation pH 6.0

Lime 3 Tons/acre or to correct to pH 6.5

Fertilizer type 10-20-20

Fertilizer amount 500 lbs/acre

Mulch 2.5 Tons/acre

Seed Mixtures

Temporary

Permanent

Seed Type	lbs/acre
Rye Grain	140

Seed Type	lbs/acre
Tall Fescue	40
Ladino Clover	5

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 Anderson*

Comments: _____

Title: Oil & Gas lease for Date: 12/13/17

Field Reviewed? Yes No

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4/9/2018

WW-9

PROPOSED BRYAN N-13HU

SUPPLEMENT PG 1

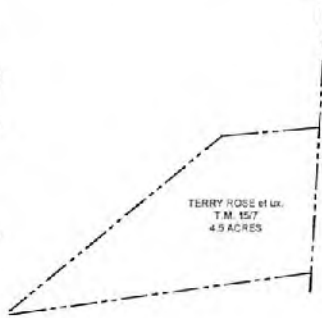
REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, EROSION AND SEDIMENT CONTROL FIELD MANUAL FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES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

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

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

ALL CUT AND FILL SLOPES ARE 3H: 1V SLOPE.

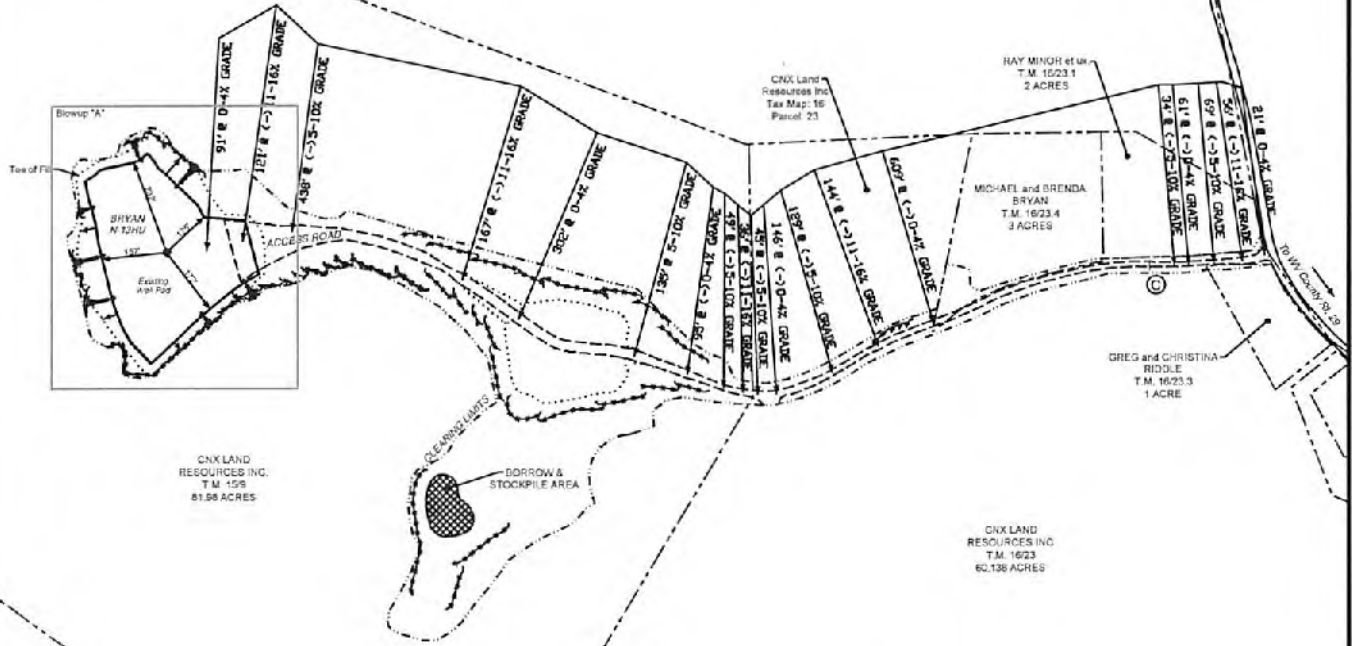
ALL TREES 6-INCHES AND ABOVE ARE TO BE CUT AND STACKED. BRUSH SLASHINGS ARE TO UTILIZED DOWN SLOPE OF SITE AND STRUCTURES TO ACT AS A CONTROL BARRIER IF AVAILABLE.



TERRY D. ROSE ET UX
T.M. 157/66
77.11 Acres



DRAWING NOT TO SCALE



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Environmental Protection

LEGEND

Note:

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

DATE: 12/12/17

PROJECT NO: 494510851

DRAWN BY: J.A.H.

APR 9 2018

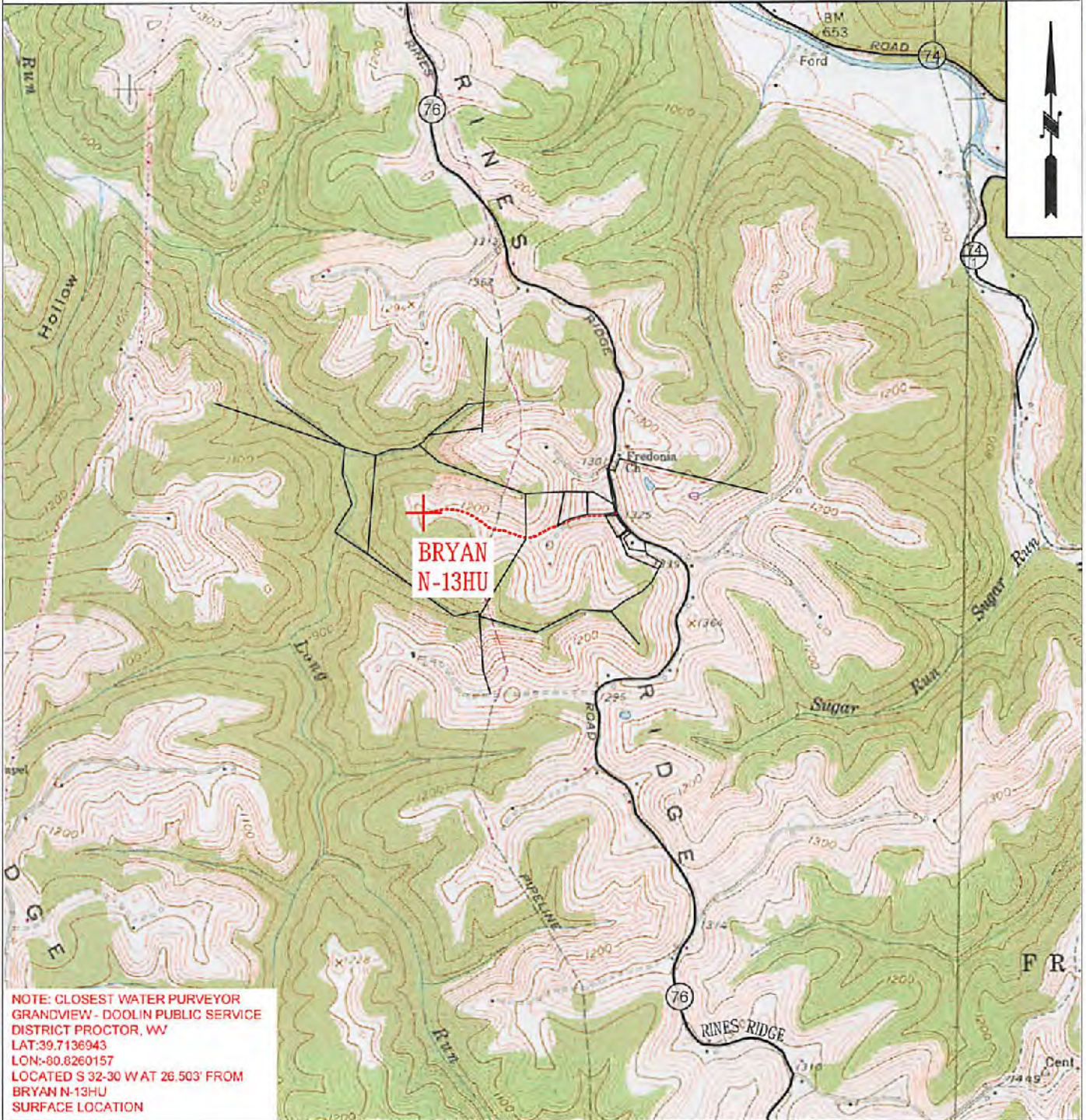
51-02030

WW-9

WV Department of
Environmental Protection

**PROPOSED
BRYAN N-13HU**

SUPPLEMENT PG 2



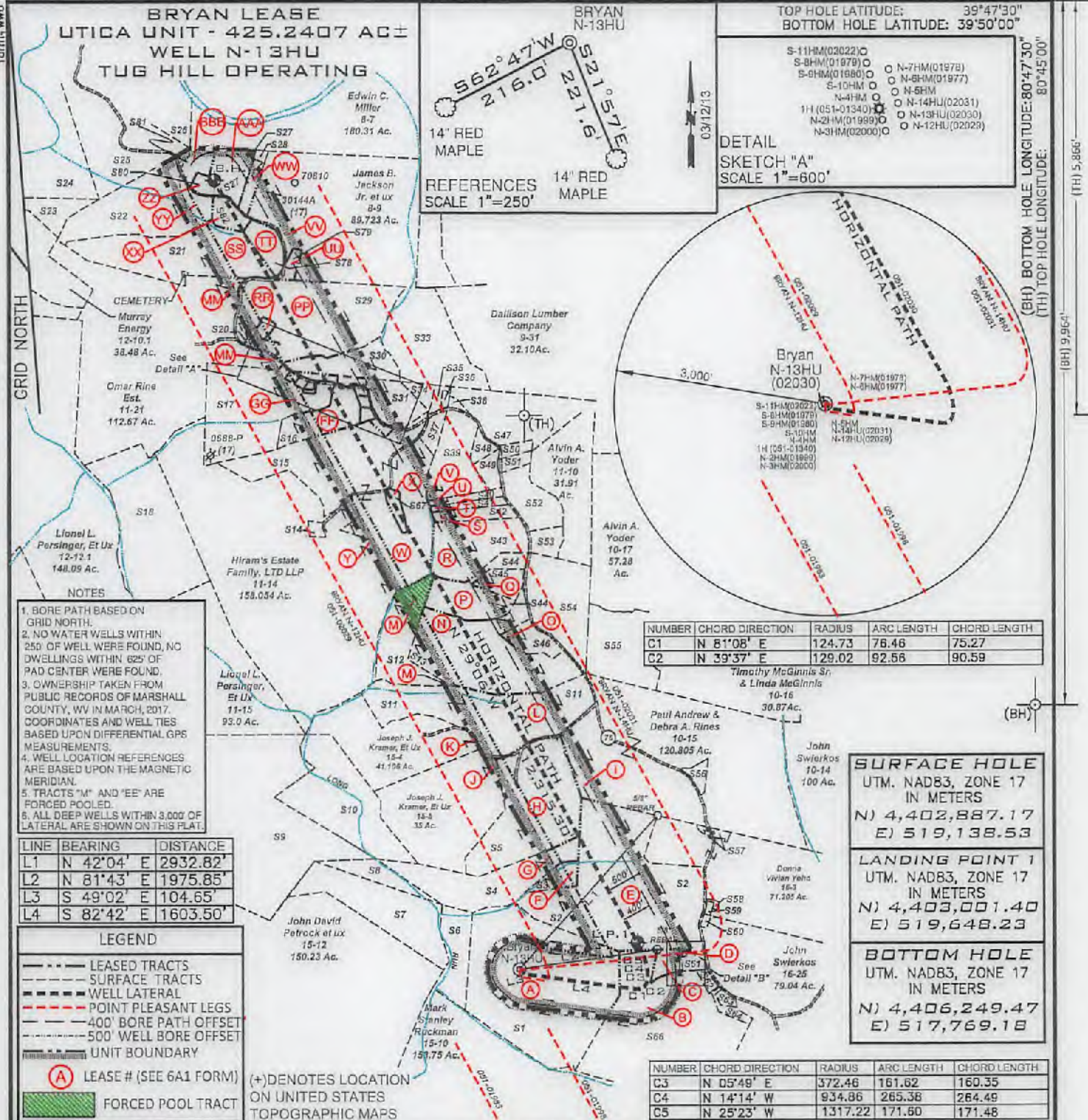
NOTE: CLOSEST WATER PURVEYOR
GRANDVIEW - DOOLIN PUBLIC SERVICE
DISTRICT PROCTOR, WV
LAT:39.7136943
LON:-80.8260157
LOCATED S 32-30 W AT 26.503' FROM
BRYAN N-13HU
SURFACE LOCATION



**TUG HILL
OPERATING**

OPERATOR	494510851	TOPO SECTION	LEASE NAME
TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		POWHATAN POINT 7.5'	BRYAN
SCALE:		DATE:	
1" = 2000'		DATE: 12/12/17	

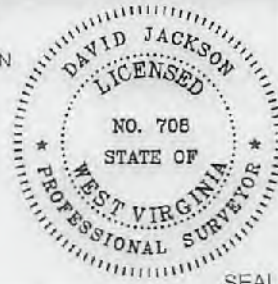
09/07/2018



FILE NUMBER _____
 DRAWING NUMBER BRYAN_WP_N-13HU
 SCALE 1" = 2000'
 MINIMUM DEGREE OF ACCURACY 1/200
 PROVEN SOURCE OF ELEVATION SUBMETER MAPPING
GRADE GPS

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

P.S. 708
David L Jackson



JACKSON SURVEYING INC.
 P.O. Box 1460
 Clarksburg, WV 26302
 304-623-5851

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

DATE: DECEMBER 27, 2017
 REVISED DATE: JULY 16, 2018
 OPERATORS WELL NO. BRYAN N-13HU
 API WELL NO. _____
 STATE COUNTY PERMIT 47-051-02030 H6A

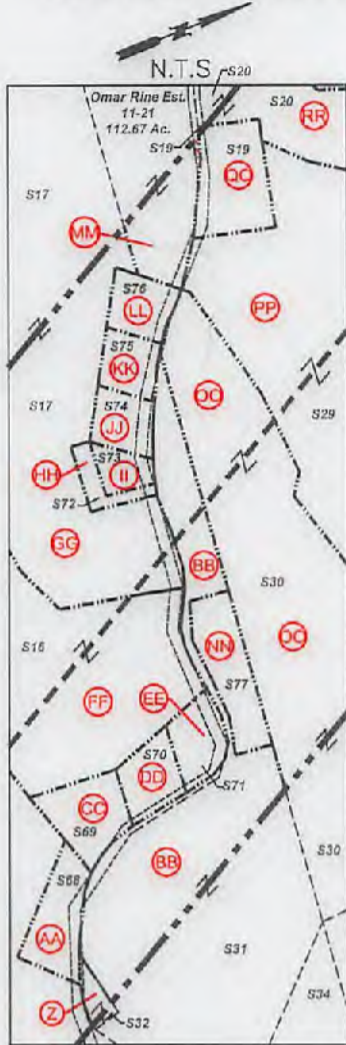
WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS") PRODUCTION X STORAGE ___ DEEP X SHALLOW ___
 LOCATION ELEVATION 1191.0' WATERSHED (HUC 10) Fish Creek
 DISTRICT Franklin COUNTY Marshall
 QUADRANGLE Powhatan Point 7.5' LEASE NUMBER SEE WW-6A1 ROYALTY OWNERS

SURFACE OWNER CNX LAND RESOURCES, INC. ACREAGE 81.98
 OIL & GAS ROYALTY OWNER MICHAEL R. BRYAN - SEE WW-6A1 ROYALTY OWNERS LEASE ACREAGE 81.98
 PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___
 PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) _____
 PLUG & ABANDON ___ CLEAN OUT & REPLUG ___
 TARGET FORMATION Point Pleasant ESTIMATED DEPTH TVD: 11,393' TMD: 24,342'
 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

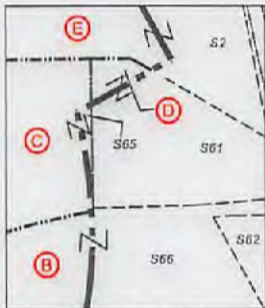
09/07/2018

COUNTY NAME
 PERMIT

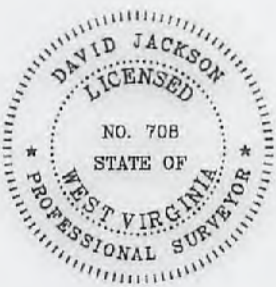
**BRYAN LEASE
UTICA UNIT - 425.2407 AC±
WELL N-13HU
TUG HILL OPERATING**



Detail "A"



Detail "B"



47-051-02030H6A

P.S. 708

David L Jackson

Number	TAX MAP -PARCEL	SURFACE OWNER	ACRES
S1	15-9	CNX Land Resources, Inc.	81.98
S2	15-8	Terry D. Rose, et ux	77.1
S3	15-7	Terry D. Rose, et ux	4.5
S4	15-6.1	Joseph J. Kramar, et ux	39.40
S5	15-6	Joseph J. Kramar, et ux	42.5
S6	15-13	CNX Land Resources	11.0
S7	15-14	John David Petrock, et ux	25.0
S8	15-2	John David Petrock, et ux	5.0
S9	15-1	Marcus Sharp & David Schlabach	121.0
S10	15-3	Joseph J. Kramar, et ux	36.10
S11	11-12	Joseph J. Kramar, et ux	43.2188
S12	11-13	Joy D. Gartman & Arlin Gatts	12.29
S13	11-11.3	Herman D. & Herman J. Lantz	43.96
S14	11-14.1	Dennis F. Moore, et ux	1.056
S15	11-16	Keith E. Haught, et al	83.674
S16	11-17.2	Brenda & Michael Bryan	11.504
S17	11-17	Kevin R. Corlay, et ux	36.13
S18	12-11	Wesley Bryan & Wesley Bryan II	52.478
S19	11-2.2	Joshua A. Myers	2.193
S20	11-2.1	Walter C. & Cheryl A. Rine	1.19
S21	11-1.1	Larry W. Dunlap, et al	34.405
S22	11-1.4	Larry W. Dunlap, et al	32.493
S23	12-9	Lionel & Mary Lee Persinger	10.15
S24	7-39	Lionel L. Persinger, et ux	57.0
S25	7-33	William N. Roupe	24.60
S26	7-31	William N. Roupe	43.147
S27	11-1.7	William S. & Mary K. Adams	8.0
S28	11-1.5	Paul White	3.507
S29	11-2	Walter C. & Cheryl A. Rine	42.367
S30	11-3	Kevin R. Corley, et al	13.18
S31	11-5	Kevin R. Corley, et ux	10.36
S32	11-5.1	James R. Anderson, et ux	0.205
S33	11-4	David H. Arrick, et ux	31.5
S34	11-5.3	Robert Harris Arrick, et ux	3.0
S35	11-6	Robert & Rebecca Arrick	1.29
S36	11-7	Baptist Cemetery	1.0
S37	11-16.3	Kegan Michael Haught - Life	3.265
S38	11-8	Baptist Church	0.8
S39	11-9.3	Joseph M. Haught & Steven Haught	16.3
S40	11-9.5	Southern Country Farms, Inc	2.559
S41	11-9.6	Southern Country Farms, Inc	2.488
S42	11-9.9	Leonard L. Parsons, et ux	5.89
S43	11-9	Edwin C. & Kimberly A. Miller	41.773
S44	11-11.4	Brad M. & Amanda J. Blake	15.193
S45	11-11	Brad M. & Amanda J. Blake	5.0
S46	11-11.1	Nellie Marie & Robert W. Spencar	5.813
S47	11-9	Edwin C. & Kimberly A. Miller	41.773
S48	11-9.10	John A. & Janet L. Beucke	2.348
S49	11-9.2	Michael R. Bryan	3.143
S50	11-9.8	Saan F. Moore	2.070
S51	11-9.7	Sean F. Moore	2.026
S52	11-9.1	Jack Shepard Huggins Jr., et al	10.92
S53	11-9.4	Jack S. Huggins, et al	4.129
S54	11-11.2	Wesley R. Bryan & Wesley R. Bryan II	25.031
S55	10-16.4	Malvin E. Ferguson & Elizabeth Ferguson	30.87
S56	10-15.1	Donald T. Miller	2.095
S57	16-3.2	Jimmy Lee Ostrander Jr., Sheana Lynn Ostrander & Brody Ray Ostrander	1.435
S58	16-3.1	Dannis E. Jackson, et ux	0.27
S59	16-2	Christian Church	0.19
S60	16-1	Christian Church	0.50
S61	16-23.1	Ray E. Minor, et ux	2.0
S62	16-23.3	Greg & Christina Riddle	1.0
S63	16-24	Alan M. Beyser, et ux	1.083
S64	16-23.2	Alan M. Beyser, et ux	1.726
S65	16-23.4	Michael R. & Brenda K. Bryan	3.0
S66	16-23	CNX Land Resources, Inc.	60.138
S67	11-16.2	Joseph Haught	2.181
S68	11-16.1	Susan Smith, LE	0.876
S69	11-25	Owen Michael Barr	0.598
S70	11-23	Owen Michael Barr	0.845
S71	11-24	Charles Edward Furbee, et ux	0.603
S72	11-17.1	David Gray	0.297
S73	11-22	David Gray	0.353
S74	11-18	David E. Gray	0.569
S75	11-19	David E. Gray	0.532
S76	11-20	David E. Gray	0.569
S77	11-5.2	Rickey & Victoria Cross	1.0
S78	11-1.2	Jay A. Conner, et ux	5.824
S79	8-9.1	Scott E. Jackson, Tammy S. South & Marion Jackson	1.957
S80	11-1.6	Debra Morris	2.093
S81	11-1	William N. & Virginia A. Roupe	4.527
S82	11-1.3	Jay A. Conner, et ux	7.266

09/07/2018



OPERATOR'S
WELL #: Bryan N-13HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

WELL PLAT
PAGE 2 OF 4
DATE: 12/27/2017
REVISED DATE:
07/16/2018

BRYAN LEASE
UTICA UNIT - 425,2407 AC±
WELL N-13HU
TUG HILL OPERATING

Table with columns: LEASE NO., TAGS, PARCEL, OIL & GAS ROYALTY OWNER, DEED BOOK, PAGE. Lists lease details for various parcels and owners.

Table with columns: LEASE NO., TAGS, PARCEL, OIL & GAS ROYALTY OWNER, DEED BOOK, PAGE. Continuation of lease details from the previous table.



47-051-02030 H6A

P.S. 708 David L Jackson

47-051-02030 H6A

09/07/2018



OPERATOR'S WELL #: Bryan N-13HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

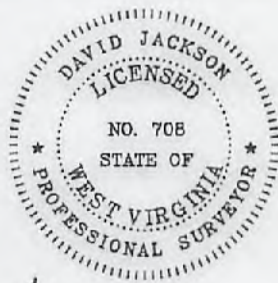
WELL PLAT
PAGE 3 OF 4
DATE: 01/10/2018
REVISED DATE: 07/16/2018

BRYAN LEASE
UTICA UNIT - 425.2407 AC±
WELL N-13HU
TUG HILL OPERATING

Table with columns: LEASE NO., TAGS, PARCEL, OIL & GAS ROYALTY OWNER, DEED BOOK, PAGE. Lists lease details for various owners including James E. Yohe, Carol M. Yohe, and others.

Table with columns: LEASE NO., TAGS, PARCEL, OIL & GAS ROYALTY OWNER, DEED BOOK, PAGE. Continuation of lease details for various owners including Carol M. Yohe, Dayna Marlene Yohe, and others.

*** Force pool Interest



P.S. 708

David L Jackson

47-056-02030 H6A

09/07/2018



TUG HILL OPERATING

OPERATOR'S WELL #: Bryan N-13HU
DISTRICT: Franklin
COUNTY: Marshall
STATE: WV

WELL PLAT
PAGE 4 OF 4
DATE: 01/10/2018
REVISED DATE: 07/16/2018

WW-6A1
(5/13)

Operator's Well No. Bryan N-13HU

**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

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Office of Oil and Gas

APR 9 2018

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 Region

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*19294	A	5-15-9	BRENDA K BRYAN ET AL	TRIENERGY INC	1/8+	666	289	20/348 TriEnergy Inc to AB Resources LLC	21/491 AB Resources LLC to Chief Exploration & Development LLC and Radler 2000 Limited Partnership	685/643 Chief Exploration & Development LLC and Radler 2000 Limited Partnership to Enerplus Resources (USA) Corporation	25/1 Chief Exploration & Development, LLC, Chief Oil and Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources to Chevron USA Inc	25/105 Chief Exploration & Development, LLC, Chief Oil & Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources (USA) Corporation to Chevron USA Inc	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19294	B	5-16-23	BRENDA K BRYAN ET AL	TRIENERGY INC	1/8+	666	289	20/348 TriEnergy Inc to AB Resources LLC	21/491 AB Resources LLC to Chief Exploration & Development LLC and Radler 2000 Limited Partnership	685/643 Chief Exploration & Development LLC and Radler 2000 Limited Partnership to Enerplus Resources (USA) Corporation	25/1 Chief Exploration & Development, LLC, Chief Oil and Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources to Chevron USA Inc	25/105 Chief Exploration & Development, LLC, Chief Oil & Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources (USA) Corporation to Chevron USA Inc	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19294	C	5-16-23.4	BRENDA K BRYAN ET AL	TRIENERGY INC	1/8+	666	289	20/348 TriEnergy Inc to AB Resources LLC	21/491 AB Resources LLC to Chief Exploration & Development LLC and Radler 2000 Limited Partnership	685/643 Chief Exploration & Development LLC and Radler 2000 Limited Partnership to Enerplus Resources (USA) Corporation	25/1 Chief Exploration & Development, LLC, Chief Oil and Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources to Chevron USA Inc	25/105 Chief Exploration & Development, LLC, Chief Oil & Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources (USA) Corporation to Chevron USA Inc	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19146	D	5-16-23.1	RAY E MINOR CATHY L MINOR	TRIENERGY HOLDINGS, LLC	1/8+	706	293	24/180 TriEnergy Holdings, LLC, to NPAR, LLC.	24/466 AB Resources LLC and NPAR, LLC to Chief Exploration & Development LLC and Radler 2000 Limited Partnership	25/1 Chief Exploration & Development, LLC, Chief Oil and Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources to Chevron USA Inc	25/105 Chief Exploration & Development, LLC, Chief Oil & Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources (USA) Corporation to Chevron USA Inc.	756/332 NPAR, LLC to Chevron USA Inc	28/356 TriEnergy Holdings, LLC and TriEnergy, Inc to Chevron USA Inc	35/470 WPP LLC to KRP Marcellus I, LLC, Rivercrest Royalties II, LLC, Diversified Rox Minerals, LLC, BRD Royalty Holdings, LLC and Amon G Carter Foundation	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19340	E	5-15-8	DONNA V YOHO	GASTAR EXPLORATION USA INC	1/8+	665	407	N/A	23/353 Gastar Exploration USA Inc. to Atinum Marcellus I LLC	23/617 Gastar Exploration USA Inc and Atinum Marcellus I LLC to AB Resources LLC	24/319 AB Resources LLC to Chief Exploration & Development LLC and Radler 2000 Limited Partnership	25/1 Chief Exploration & Development, LLC, Chief Oil and Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources to Chevron USA Inc	756/397 AB Resources LLC to Chevron USA Inc	40/57 Chevron USA Inc. to TH Exploration LLC	
10*19340	F	5-15-7	DONNA VIVIAN YOHO	GASTAR EXPLORATION USA INC	1/8+	665	407	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	23/617 Gastar Exploration USA, Atinum Marcellus I LLC to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19293	G	5-15-6.1	JOSEPH J. KRAMAR, SR. JO ANN KRAMAR	TRIENERGY, INC.	1/8+	655	566	N/A	N/A	N/A	N/A	19/623 TriEnergy Inc to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19295	G	5-15-6.1	KEVIN J. KELLY PAMELA MARXEN-KELLY	CHEVRON USA INC	1/8+	858	381	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19296	G	5-15-6.1	MARISSA C MARXEN	CHEVRON USA INC	1/8+	837	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19297	G	5-15-6.1	PHILIP LEONARD MARXEN	CHEVRON USA INC	1/8+	839	410	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19298	G	5-15-6.1	BETTY J MARXEN SLEZAK	CHEVRON USA INC	1/8+	822	351	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19299	G	5-15-6.1	ANNETTE CONWAY MARXEN	CHEVRON USA INC	1/8+	817	512	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19300	G	5-15-6.1	DEBORAH F HAGEMAN HUPPERT	CHEVRON USA INC	1/8+	815	145	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19301	G	5-15-6.1	SANDRA HAGEMAN KANGAS	CHEVRON USA INC	1/8+	815	150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*19302	G	5-15-6.1	JEFFREY C MARXEN SAMANTHA L MARXEN	CHEVRON USA INC	1/8+	817	506	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19303	G	5-15-6.1	THOMAS O MARXEN	CHEVRON USA INC	1/8+	814	589	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19304	G	5-15-6.1	DEAN L RINE, JR. PAMELA F. RINE	CHEVRON USA INC	1/8+	813	635	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19305	G	5-15-6.1	KAREN MARXEN SONDROL	CHEVRON USA INC	1/8+	813	605	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19306	G	5-15-6.1	RICHARD L. TATE MARCELINE RINE TATE	CHEVRON USA INC	1/8+	814	594	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19307	G	5-15-6.1	MARY SUE RINE-WALTER	CHEVRON USA INC	1/8+	815	155	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19308	G	5-15-6.1	WILLIAM WEBER	CHEVRON USA INC	1/8+	817	646	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19293	H	5-15-6	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	TRIENERGY, INC.	1/8+	655	566	N/A	N/A	N/A	N/A	N/A	19/623 TriEnergy Inc to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19295	H	5-15-6	KEVIN J. KELLY PAMELA MARXEN-KELLY	CHEVRON USA INC	1/8+	858	381	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19296	H	5-15-6	MARISSA C MARXEN	CHEVRON USA INC	1/8+	837	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19297	H	5-15-6	PHILIP LEONARD MARXEN	CHEVRON USA INC	1/8+	839	410	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19298	H	5-15-6	BETTY J MARXEN SLEZAK	CHEVRON USA INC	1/8+	822	351	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19299	H	5-15-6	ANNETTE CONWAY MARXEN	CHEVRON USA INC	1/8+	817	512	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19300	H	5-15-6	DEBORAH F HAGEMAN HUPPERT	CHEVRON USA INC	1/8+	815	145	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19301	H	5-15-6	SANDRA HAGEMAN KANGAS	CHEVRON USA INC	1/8+	815	150	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19302	H	5-15-6	JEFFREY C MARXEN SAMANTHA L MARXEN	CHEVRON USA INC	1/8+	817	506	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19303	H	5-15-6	THOMAS O MARXEN	CHEVRON USA INC	1/8+	814	589	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19304	H	5-15-6	DEAN L RINE, JR. PAMELA F. RINE	CHEVRON USA INC	1/8+	813	635	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19305	H	5-15-6	KAREN MARXEN SONDROL	CHEVRON USA INC	1/8+	813	605	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC

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10*19306	H	5-15-6	RICHARD L. TATE MARCELINE RINE TATE	CHEVRON USA INC	1/8+	814	594	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19307	H	5-15-6	MARY SUE RINE-WALTER	CHEVRON USA INC	1/8+	815	155	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19308	H	5-15-6	WILLIAM WEBER	CHEVRON USA INC	1/8+	817	646	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19017	I	5-10-15	PAUL A RINE AND DEBRA A RINE	CHEVRON USA INC	1/8+	796	24	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19293	J	5-15-5	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	TRIENERGY, INC.	1/8+	655	566	N/A	N/A	N/A	N/A	19/623 TriEnergy Inc to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19293	K	5-15-4	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	TRIENERGY, INC.	1/8+	655	566	N/A	N/A	N/A	N/A	19/623 TriEnergy Inc to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*19293	L	5-11-12	JOSEPH I. KRAMAR, SR. JO ANN KRAMAR	TRIENERGY, INC.	1/8+	655	566	N/A	N/A	N/A	N/A	19/623 TriEnergy Inc to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	28/356 TriEnergy Holdings LLC and TriEnergy Inc to Chevron USA Inc	N/A	40/57 Chevron USA Inc to TH Exploration LLC
10*18972	M	5-11-13	MARGARET CLICKNER	TH EXPLORATION LLC	1/8+	941	281	N/A	N/A	N/A	N/A	NA	NA	NA	NA	NA
10*19224	M	5-11-13	AMYSUE G BAHL	GASTAR EXPLORATION USA INC	1/8+	731	166	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19225	M	5-11-13	LOIS BURNS	GASTAR EXPLORATION USA INC	1/8+	731	174	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19226	M	5-11-13	THOMAS RAY GATTS	TRIENERGY, INC.	1/8+	731	162	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19227	M	5-11-13	CONNIE KRESS KNAPP	GASTAR EXPLORATION USA INC	1/8+	734	451	N/A	N/A	N/A	N/A	26/183 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19228	M	5-11-13	CAROLE J LAMBERT	GASTAR EXPLORATION USA INC	1/8+	737	225	N/A	N/A	N/A	N/A	26/183 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19229	M	5-11-13	PATRICIA A LAMBERT	GASTAR EXPLORATION USA INC	1/8+	731	158	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19230	M	5-11-13	MARIANN VIRGINIA MUNN	GASTAR EXPLORATION USA INC	1/8+	731	160	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19231	M	5-11-13	DALE F RADCLIFF	GASTAR EXPLORATION USA INC	1/8+	734	462	NA	NA	NA	NA	26/183 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19232	M	5-11-13	SANDRA J STOWE HARMON	GASTAR EXPLORATION USA INC	1/8+	731	149	NA	NA	NA	NA	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19233	M	5-11-13	SHERLEY RAY STOWE	GASTAR EXPLORATION USA INC	1/8+	731	170	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19234	M	5-11-13	STANLEY EUGENE STOWE	GASTAR EXPLORATION USA INC	1/8+	732	631	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	26/183 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC

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10*19235	M	5-11-13	ROSE EDGE	GASTAR EXPLORATION USA INC	1/8+	731	164	N/A	N/A	N/A	N/A	735/263 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19244	M	5-11-13	JERRY L BLOOD	GASTAR EXPLORATION USA INC	1/8+	736	177	N/A	N/A	N/A	N/A	26/183 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19247	M	5-11-13	JUANITA MCVEY	GASTAR EXPLORATION USA INC	1/8+	745	580	N/A	N/A	N/A	N/A	26/639 Gaster Exploration USA, Inc to Atinum Marcellus I LLC	21/41 Cert. of Merger Gaster Exploration USA, Inc to Gaster Exploration Inc	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*21009	M	5-11-13	JOY DENEAN GARTMAN	TH EXPLORATION LLC	1/8+	951	595	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21042	M	5-11-13	REBECCA ASPERY	TH EXPLORATION, LLC	1/8+	952	428	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21046	M	5-11-13	KELLY R DUNN	TH EXPLORATION, LLC	1/8+	951	591	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21047	M	5-11-13	RACHEL D DONAHUE	TH EXPLORATION, LLC	1/8+	951	589	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21048	M	5-11-13	MICHAEL P OLSON	TH EXPLORATION, LLC	1/8+	951	593	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21253	M	5-11-13	MARY ANN STURGILL	TH EXPLORATION, LLC	1/8+	952	430	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23316	M	5-11-13	WILLIAM J OLSON	TH EXPLORATION, LLC	1/8+	985	58	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
***	M	5-11-13	EVA PATTERSON	*** UNLEASED				N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19336	N	5-11-11.3	BONNIE JEAN DAWSON	GASTAR EXPLORATION USA INC	1/8+	665	397	N/A	N/A	N/A	N/A	23/353 Gaster Exploration USA Inc to Atinum Marcellus I LLC	23/617 Gaster Exploration USA, Atinum Marcellus I LLC to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19336	N	5-11-11.3	BONNIE JEAN DAWSON	GASTAR EXPLORATION USA INC	1/8+	665	397	N/A	N/A	N/A	N/A	23/353 Gaster Exploration USA Inc to Atinum Marcellus I LLC	23/617 Gaster Exploration USA, Atinum Marcellus I LLC to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19141	O	5-11-11.1	ROBERT W SPENCER JR NELLIE MARIE SPENCER	GASTAR EXPLORATION USA INC	1/8+	705	468	N/A	23/353 Gaster Exploration USA Inc to Atinum Marcellus I LLC	23/624 Gaster Exploration USA and Atinum Marcellus I LLC to AB Resources	24/1 AB Resources LLC, Chief Exploration & Development LLC, Chief Oil and Gas, LLC, Radler 2000 Limited Partnership, Enerplus Resources Corp to TriEnergy Holdings LLC.	25/1 Chief Exploration & Development, LLC, Chief Oil and Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources to Chevron USA Inc	25/105 Chief Exploration & Development, LLC, Chief Oil & Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources (USA) Corporation to Chevron USA Inc.	756/397 AB Resources LLC to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19336	P	5-11-11.4	BONNIE JEAN DAWSON	GASTAR EXPLORATION USA INC	1/8+	665	397	N/A	N/A	N/A	N/A	23/353 Gaster Exploration USA Inc to Atinum Marcellus I LLC	23/617 Gaster Exploration USA, Atinum Marcellus I LLC to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*19336	Q	5-11-11	BONNIE JEAN DAWSON	GASTAR EXPLORATION USA INC	1/8+	665	397	N/A	N/A	N/A	N/A	23/353 Gaster Exploration USA Inc to Atinum Marcellus I LLC	23/617 Gaster Exploration USA, Atinum Marcellus I LLC to AB Resources LLC	756/397 AB Resources LLC to Chevron USA Inc	40/57 Chevron USA Inc to TH Exploration LLC
10*14099	R	5-11-9	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA INC	1/8+	566	489	N/A	N/A	N/A	N/A	N/A	23/353 Gaster Exploration USA Inc. to Atinum Marcellus I LLC	32/362 Gaster Exploration USA Inc and Atinum Marcellus I LLC to Chevron USA Inc	40/127 Chevron USA Inc to TH Exploration LLC
10*19158	S	5-11-9.9	LEONARD PARSONS CONNIE R PARSONS	GASTAR EXPLORATION USA INC	1/8+	705	125	N/A	N/A	N/A	N/A	N/A	23/353 Gaster Exploration USA Inc to Atinum Marcellus I LLC	32/362 Gaster Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

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Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*14099	T	5-11-9.6	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA INC	1/8+	666	489	N/A	N/A	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA Inc. to Atinum Marcellus I LLC	32/362 Gastar Exploration USA Inc tnd Atinum Marcellus I LLC to Chevron USA Inc	40/127 Chevron USA Inc to TH Exploration LLC
10*14099	U	5-11-9.5	SOUTHERN COUNTRY FARMS INC	GASTAR EXPLORATION USA INC	1/8+	666	489	N/A	N/A	N/A	N/A	N/A	N/A	23/353 Gastar Exploration USA Inc. to Atinum Marcellus I LLC	32/362 Gastar Exploration USA Inc tnd Atinum Marcellus I LLC to Chevron USA Inc	40/127 Chevron USA Inc to TH Exploration LLC
10*18339	V	5-11-9.3	RESOURCE MINERALS HEADWATER I, LP	TH EXPLORATION LLC	1/8+	940	448	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19139	W	5-11-16	HIRAM V MOORE	GASTAR EXPLORATION USA INC	1/8+	699	53	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19178	W	5-11-16	JOSEPH HAUGHT	GASTAR EXPLORATION USA INC	1/8+	710	69	N/A	N/A	N/A	N/A	N/A	N/A	24/335 Gastar Exploration USA Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19179	W	5-11-16	KEITH HAUGHT BEVERLY HAUGHT	GASTAR EXPLORATION USA INC	1/8+	710	587	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19180	W	5-11-16	STEVEN HAUGHT	GASTAR EXPLORATION USA, INC	1/8+	710	67	N/A	N/A	N/A	N/A	N/A	N/A	24/335 Gastar Exploration USA Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19139	X	5-11-16.2	HIRAM V MOORE	GASTAR EXPLORATION USA INC	1/8+	699	53	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19139	Y	5-11-14	HIRAM V MOORE	GASTAR EXPLORATION USA INC	1/8+	699	53	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
Q079728000	Z	5-11-5.1	JAMES R AND MELODY A ANDERSON	NOBLE ENERGY INC	1/8+	812	31	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC	962/488 HG Energy II Appalachia, LLC to TH Exploration, LLC
10*19139	AA	5-11-16.1	HIRAM V MOORE	GASTAR EXPLORATION USA INC	1/8+	699	53	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19170	AA	5-11-16.1	SUSAN MARIE SMITH NKA SUSAN MARIE HAMNER	GASTAR EXPLORATION USA INC	1/8+	706	583	N/A	N/A	N/A	N/A	N/A	21/41 Cert. of Merger Gastar Exploration USA, Inc to Gastar Exploration Inc	23/353 Gastar Exploration USA Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19126	BB	5-11-5	KEVIN R. CORLEY AND ANITA L. CORLEY, HUSBAND AND WIFE	CHEVRON USA INC	1/8+	859	47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19176	BB	5-11-5	MAUNA MAXINE BEYSER	GASTAR EXPLORATION USA INC	1/8+	710	602	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19177	BB	5-11-5	NINA L KOVACS	GASTAR EXPLORATION USA INC	1/8+	710	594	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19185	BB	5-11-5	HARRIETT LODUTH FOLEY	GASTAR EXPLORATION USA INC	1/8+	710	598	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19186	BB	5-11-5	JOEL GLOVER	GASTAR EXPLORATION USA INC	1/8+	710	600	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19189	BB	5-11-5	SHERRY ANN MCPHERON	GASTAR EXPLORATION USA INC	1/8+	710	606	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19190	BB	5-11-5	SALLY LEE RIVERA	GASTAR EXPLORATION USA INC	1/8+	710	590	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

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10*19191	BB	5-11-5	SHARLA BETH WEAVER	GASTAR EXPLORATION USA INC	1/8+	710	608	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19192	BB	5-11-5	JAMES E YOHO	GASTAR EXPLORATION USA INC	1/8+	714	129	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19201	BB	5-11-5	DANIEL K YOHO	GASTAR EXPLORATION USA INC	1/8+	714	125	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19202	BB	5-11-5	DEBORAH L WOOLEY	GASTAR EXPLORATION USA INC	1/8+	714	131	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19203	BB	5-11-5	CAROL M YOHO	GASTAR EXPLORATION USA INC	1/8+	713	205	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19204	BB	5-11-5	DAYNA MARLENE YOHO	GASTAR EXPLORATION USA INC	1/8+	714	127	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19205	BB	5-11-5	JEFFREY C YOHO	GASTAR EXPLORATION USA INC	1/8+	713	203	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19251	BB	5-11-5	RAE SUZETTE BAKER	GASTAR EXPLORATION USA INC	1/8+	748	315	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19252	BB	5-11-5	JOHN WILSON	GASTAR EXPLORATION USA INC	1/8+	749	522	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19502	BB	5-11-5	SUSAN BLANCHE BEYSER	TH EXPLORATION LLC	1/8+	942	623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19893	BB	5-11-5	WINIFRED G AND EDDIE G TURNER	TH EXPLORATION, LLC	1/8+	948	277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21041	BB	5-11-5	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18946	CC	5-11-25	OWEN MICHAEL BARR AND TARA C BARR	TH EXPLORATION LLC	1/8+	939	388	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19176	CC	5-11-25	MAUNA MAXINE BEYSER	GASTAR EXPLORATION USA INC	1/8+	710	602	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19177	CC	5-11-25	NINA L KOVACS	GASTAR EXPLORATION USA INC	1/8+	710	594	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19185	CC	5-11-25	HARRIETT LODUTH FOLEY	GASTAR EXPLORATION USA INC	1/8+	710	598	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19186	CC	5-11-25	JOEL GLOVER	GASTAR EXPLORATION USA INC	1/8+	710	600	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19189	CC	5-11-25	SHERRY ANN MCPHERON	GASTAR EXPLORATION USA INC	1/8+	710	606	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19190	CC	5-11-25	SALLY LEE RIVERA	GASTAR EXPLORATION USA INC	1/8+	710	590	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*19191	CC	5-11-25	SHARLA BETH WEAVER	GASTAR EXPLORATION USA INC	1/8+	710	608	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19192	CC	5-11-25	JAMES E YOHO	GASTAR EXPLORATION USA INC	1/8+	714	129	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19201	CC	5-11-25	DANIEL K YOHO	GASTAR EXPLORATION USA INC	1/8+	714	125	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19202	CC	5-11-25	DEBORAH L WOOLEY	GASTAR EXPLORATION USA INC	1/8+	714	131	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19203	CC	5-11-25	CAROL M YOHO	GASTAR EXPLORATION USA INC	1/8+	713	205	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19204	CC	5-11-25	DAYNA MARLENE YOHO	GASTAR EXPLORATION USA INC	1/8+	714	127	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19205	CC	5-11-25	JEFFREY C YOHO	GASTAR EXPLORATION USA INC	1/8+	713	203	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19251	CC	5-11-25	RAE SUZETTE BAKER	GASTAR EXPLORATION USA INC	1/8+	748	315	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19252	CC	5-11-25	JOHN WILSON	GASTAR EXPLORATION USA INC	1/8+	749	522	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19502	CC	5-11-25	SUSAN BLANCHE BEYSER	TH EXPLORATION LLC	1/8+	942	623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19893	CC	5-11-25	WINIFRED G AND EDDIE G TURNER	TH EXPLORATION, LLC	1/8+	948	277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21041	CC	5-11-25	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18946	DD	5-11-23	OWEN MICHAEL BARR AND TARA C BARR	TH EXPLORATION LLC	1/8+	939	388	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19176	DD	5-11-23	MAUNA MAXINE BEYSER	GASTAR EXPLORATION USA INC	1/8+	710	602	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19177	DD	5-11-23	NINA L KOVACS	GASTAR EXPLORATION USA INC	1/8+	710	594	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19185	DD	5-11-23	HARRIETT LODUTH FOLEY	GASTAR EXPLORATION USA INC	1/8+	710	598	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19186	DD	5-11-23	JOEL GLOVER	GASTAR EXPLORATION USA INC	1/8+	710	600	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19189	DD	5-11-23	SHERRY ANN MCPHERON	GASTAR EXPLORATION USA INC	1/8+	710	606	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19190	DD	5-11-23	SALLY LEE RIVERA	GASTAR EXPLORATION USA INC	1/8+	710	590	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

WW-6A1 Supplement

Operator's Well No. Bryan N - 13HU

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10*19191	DD	5-11-23	SHARLA BETH WEAVER	GASTAR EXPLORATION USA INC	1/8+	710	608	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19192	DD	5-11-23	JAMES E YOHO	GASTAR EXPLORATION USA INC	1/8+	714	129	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19201	DD	5-11-23	DANIEL K YOHO	GASTAR EXPLORATION USA INC	1/8+	714	125	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19202	DD	5-11-23	DEBORAH L WOOLEY	GASTAR EXPLORATION USA INC	1/8+	714	131	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19203	DD	5-11-23	CAROL M YOHO	GASTAR EXPLORATION USA INC	1/8+	713	205	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19204	DD	5-11-23	DAYNA MARLENE YOHO	GASTAR EXPLORATION USA INC	1/8+	714	127	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19205	DD	5-11-23	JEFFREY C YOHO	GASTAR EXPLORATION USA INC	1/8+	713	203	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19251	DD	5-11-23	RAE SUZETTE BAKER	GASTAR EXPLORATION USA INC	1/8+	748	315	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19252	DD	5-11-23	JOHN WILSON	GASTAR EXPLORATION USA INC	1/8+	749	522	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19502	DD	5-11-23	SUSAN BLANCHE BEYSER	TH EXPLORATION LLC	1/8+	942	623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19893	DD	5-11-23	WINIFRED G AND EDDIE G TURNER	TH EXPLORATION, LLC	1/8+	948	277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21041	DD	5-11-23	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19176	EE	5-11-24	MAUNA MAXINE BEYSER	GASTAR EXPLORATION USA INC	1/8+	710	602	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19177	EE	5-11-24	NINA L KOVACS	GASTAR EXPLORATION USA INC	1/8+	710	594	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19185	EE	5-11-24	HARRIETT LODUTH FOLEY	GASTAR EXPLORATION USA INC	1/8+	710	598	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19186	EE	5-11-24	JOEL GLOVER	GASTAR EXPLORATION USA INC	1/8+	710	600	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19189	EE	5-11-24	SHERRY ANN MCPHERON	GASTAR EXPLORATION USA INC	1/8+	710	606	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19190	EE	5-11-24	SALLY LEE RIVERA	GASTAR EXPLORATION USA INC	1/8+	710	590	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19191	EE	5-11-24	SHARLA BETH WEAVER	GASTAR EXPLORATION USA INC	1/8+	710	608	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*19192	EE	5-11-24	JAMES E YOHO	GASTAR EXPLORATION USA INC	1/8+	714	129	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19201	EE	5-11-24	DANIEL K YOHO	GASTAR EXPLORATION USA INC	1/8+	714	125	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19202	EE	5-11-24	DEBORAH L WOOLEY	GASTAR EXPLORATION USA INC	1/8+	714	131	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19203	EE	5-11-24	CAROL M YOHO	GASTAR EXPLORATION USA INC	1/8+	713	205	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19204	EE	5-11-24	DAYNA MARLENE YOHO	GASTAR EXPLORATION USA INC	1/8+	714	127	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19205	EE	5-11-24	JEFFREY C YOHO	GASTAR EXPLORATION USA INC	1/8+	713	203	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19251	EE	5-11-24	RAE SUZETTE BAKER	GASTAR EXPLORATION USA INC	1/8+	748	315	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19252	EE	5-11-24	JOHN WILSON	GASTAR EXPLORATION USA INC	1/8+	749	522	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19502	EE	5-11-24	SUSAN BLANCHE BEYSER	TH EXPLORATION LLC	1/8+	942	623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19893	EE	5-11-24	WINIFRED G AND EDDIE G TURNER	TH EXPLORATION, LLC	1/8+	948	277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21041	EE	5-11-24	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23037	EE	5-11-24	CHARLES E FURBEE	TH EXPLORATION, LLC	1/8+	977	380	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19177	FF	5-11-17.2	NINA L KOVACS	GASTAR EXPLORATION USA INC	1/8+	710	594	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19185	FF	5-11-17.2	HARRIETT LODUTH FOLEY	GASTAR EXPLORATION USA INC	1/8+	710	598	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19186	FF	5-11-17.2	JOEL GLOVER	GASTAR EXPLORATION USA INC	1/8+	710	600	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19189	FF	5-11-17.2	SHELLY ANN MCPHERON	GASTAR EXPLORATION USA INC	1/8+	710	606	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19190	FF	5-11-17.2	SALLY LEE RIVERA	GASTAR EXPLORATION USA INC	1/8+	710	590	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19191	FF	5-11-17.2	SHARLA BETH WEAVER	GASTAR EXPLORATION USA INC	1/8+	710	608	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19192	FF	5-11-17.2	JAMES E YOHO	GASTAR EXPLORATION USA INC	1/8+	714	129	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

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10*19201	FF	5-11-17.2	DANIEL K YOHO	GASTAR EXPLORATION USA INC	1/8+	714	125	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19202	FF	5-11-17.2	DEBORAH L WOOLEY	GASTAR EXPLORATION USA INC	1/8+	714	131	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19203	FF	5-11-17.2	CAROL M YOHO	GASTAR EXPLORATION USA INC	1/8+	713	205	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19204	FF	5-11-17.2	DAYNA MARLENE YOHO	GASTAR EXPLORATION USA INC	1/8+	714	127	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19205	FF	5-11-17.2	JEFFREY C YOHO	GASTAR EXPLORATION USA INC	1/8+	713	203	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19251	FF	5-11-17.2	RAE SUZETTE BAKER	GASTAR EXPLORATION USA INC	1/8+	748	315	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19252	FF	5-11-17.2	JOHN WILSON	GASTAR EXPLORATION USA INC	1/8+	749	522	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19502	FF	5-11-17.2	SUSAN BLANCHE BEYSER	TH EXPLORATION LLC	1/8+	942	623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19893	FF	5-11-17.2	WINIFRED G AND EDDIE G TURNER	TH EXPLORATION, LLC	1/8+	948	277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21041	FF	5-11-17.2	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19126	GG	5-11-17	KEVIN R. CORLEY AND ANITA L. CORLEY	CHEVRON USA INC	1/8+	859	47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19176	GG	5-11-17	MAUNA MAXINE BEYSER	GASTAR EXPLORATION USA INC	1/8+	710	602	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19177	GG	5-11-17	NINA L KOVACS	GASTAR EXPLORATION USA INC	1/8+	710	594	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19185	GG	5-11-17	HARRIETT LODUTH FOLEY	GASTAR EXPLORATION USA INC	1/8+	710	598	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19186	GG	5-11-17	JOEL GLOVER	GASTAR EXPLORATION USA INC	1/8+	710	600	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19189	GG	5-11-17	SHELLY ANN MCPHERON	GASTAR EXPLORATION USA INC	1/8+	710	606	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19190	GG	5-11-17	SALLY LEE RIVERA	GASTAR EXPLORATION USA INC	1/8+	710	590	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19191	GG	5-11-17	SHARLA BETH WEAVER	GASTAR EXPLORATION USA INC	1/8+	710	608	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19192	GG	5-11-17	JAMES E YOHO	GASTAR EXPLORATION USA INC	1/8+	714	129	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

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10*19201	GG	5-11-17	DANIEL K YOHO	GASTAR EXPLORATION USA INC	1/8+	714	125	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19202	GG	5-11-17	DEBORAH L WOOLEY	GASTAR EXPLORATION USA INC	1/8+	714	131	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19203	GG	5-11-17	CAROL M YOHO	GASTAR EXPLORATION USA INC	1/8+	713	205	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19204	GG	5-11-17	DAYNA MARLENE YOHO	GASTAR EXPLORATION USA INC	1/8+	714	127	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19205	GG	5-11-17	JEFFREY C YOHO	GASTAR EXPLORATION USA INC	1/8+	713	203	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19251	GG	5-11-17	RAE SUZETTE BAKER	GASTAR EXPLORATION USA INC	1/8+	748	315	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19252	GG	5-11-17	JOHN WILSON	GASTAR EXPLORATION USA INC	1/8+	749	522	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19502	GG	5-11-17	SUSAN BLANCHE BEYSER	TH EXPLORATION LLC	1/8+	942	623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19893	GG	5-11-17	WINIFRED G AND EDDIE G TURNER	TH EXPLORATION, LLC	1/8+	948	277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21041	GG	5-11-17	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18945	HH	5-11-17.1	DAVID E GRAY	TH EXPLORATION LLC	1/8+	939	386	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19176	HH	5-11-17.1	MAUNA MAXINE BEYSER	GASTAR EXPLORATION USA INC	1/8+	710	602	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19177	HH	5-11-17.1	NINA L KOVACS	GASTAR EXPLORATION USA INC	1/8+	710	594	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19185	HH	5-11-17.1	HARRIETT LODUTH FOLEY	GASTAR EXPLORATION USA INC	1/8+	710	598	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19186	HH	5-11-17.1	JOEL GLOVER	GASTAR EXPLORATION USA INC	1/8+	710	600	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19189	HH	5-11-17.1	SHERRY ANN MCPHERON	GASTAR EXPLORATION USA INC	1/8+	710	606	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19190	HH	5-11-17.1	SALLY LEE RIVERA	GASTAR EXPLORATION USA INC	1/8+	710	590	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19191	HH	5-11-17.1	SHARLA BETH WEAVER	GASTAR EXPLORATION USA INC	1/8+	710	608	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19192	HH	5-11-17.1	JAMES E YOHO	GASTAR EXPLORATION USA INC	1/8+	714	129	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

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Operator's Well No. Bryan N - 13HU

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*19201	HH	5-11-17.1	DANIEL K YOHO	GASTAR EXPLORATION USA INC	1/8+	714	125	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19202	HH	5-11-17.1	DEBORAH L WOOLEY	GASTAR EXPLORATION USA INC	1/8+	714	131	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19203	HH	5-11-17.1	CAROL M YOHO	GASTAR EXPLORATION USA INC	1/8+	713	205	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19204	HH	5-11-17.1	DAYNA MARLENE YOHO	GASTAR EXPLORATION USA INC	1/8+	714	127	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19205	HH	5-11-17.1	JEFFREY C YOHO	GASTAR EXPLORATION USA INC	1/8+	713	203	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19251	HH	5-11-17.1	RAE SUZETTE BAKER	GASTAR EXPLORATION USA INC	1/8+	748	315	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19252	HH	5-11-17.1	JOHN WILSON	GASTAR EXPLORATION USA INC	1/8+	749	522	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19502	HH	5-11-17.1	SUSAN BLANCHE BEYSER	TH EXPLORATION LLC	1/8+	942	623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19893	HH	5-11-17.1	WINIFRED G AND EDDIE G TURNER	TH EXPLORATION, LLC	1/8+	948	277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21041	HH	5-11-17.1	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18945	II	5-11-22	DAVID E GRAY	TH EXPLORATION LLC	1/8+	939	386	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19176	II	5-11-22	MAUNA MAXINE BEYSER	GASTAR EXPLORATION USA INC	1/8+	710	602	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19177	II	5-11-22	NINA L KOVACS	GASTAR EXPLORATION USA INC	1/8+	710	594	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19185	II	5-11-22	HARRIETT LODUTH FOLEY	GASTAR EXPLORATION USA INC	1/8+	710	598	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19186	II	5-11-22	JOEL GLOVER	GASTAR EXPLORATION USA INC	1/8+	710	600	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19189	II	5-11-22	SHERRY ANN MCPHERON	GASTAR EXPLORATION USA INC	1/8+	710	606	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19190	II	5-11-22	SALLY LEE RIVERA	GASTAR EXPLORATION USA INC	1/8+	710	590	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19191	II	5-11-22	SHARLA BETH WEAVER	GASTAR EXPLORATION USA INC	1/8+	710	608	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19192	II	5-11-22	JAMES E YOHO	GASTAR EXPLORATION USA INC	1/8+	714	129	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

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10*19202	II	5-11-22	DEBORAH L WOOLEY	GASTAR EXPLORATION USA INC	1/8+	714	131	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19203	II	5-11-22	CAROL M YOHO	GASTAR EXPLORATION USA INC	1/8+	713	205	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19204	II	5-11-22	DAYNA MARLENE YOHO	GASTAR EXPLORATION USA INC	1/8+	714	127	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19205	II	5-11-22	JEFFREY C YOHO	GASTAR EXPLORATION USA INC	1/8+	713	203	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19251	II	5-11-22	RAE SUZETTE BAKER	GASTAR EXPLORATION USA INC	1/8+	748	315	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19252	II	5-11-22	JOHN WILSON	GASTAR EXPLORATION USA INC	1/8+	749	522	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19502	II	5-11-22	SUSAN BLANCHE BEYSER	TH EXPLORATION LLC	1/8+	942	623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19893	II	5-11-22	WINIFRED G AND EDDIE G TURNER	TH EXPLORATION, LLC	1/8+	948	277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21041	II	5-11-22	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19176	JJ	5-11-18	MAUNA MAXINE BEYSER	GASTAR EXPLORATION USA INC	1/8+	710	602	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19177	JJ	5-11-18	NINA L KOVACS	GASTAR EXPLORATION USA INC	1/8+	710	594	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19185	JJ	5-11-18	HARRIETT LODUTH FOLEY	GASTAR EXPLORATION USA INC	1/8+	710	598	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19186	JJ	5-11-18	JOEL GLOVER	GASTAR EXPLORATION USA INC	1/8+	710	600	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19187	JJ	5-11-18	DAVID E GRAY	GASTAR EXPLORATION USA INC	1/8+	710	610	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19189	JJ	5-11-18	SHERRY ANN MCPHERON	GASTAR EXPLORATION USA INC	1/8+	710	606	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19190	JJ	5-11-18	SALLY LEE RIVERA	GASTAR EXPLORATION USA INC	1/8+	710	590	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19191	JJ	5-11-18	SHARLA BETH WEAVER	GASTAR EXPLORATION USA INC	1/8+	710	608	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19192	JJ	5-11-18	JAMES E YOHO	GASTAR EXPLORATION USA INC	1/8+	714	129	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

WW-6A1 Supplement

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10*19201	JJ	5-11-18	DANIEL K YOHO	GASTAR EXPLORATION USA INC	1/8+	714	125	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19202	JJ	5-11-18	DEBORAH L WOOLEY	GASTAR EXPLORATION USA INC	1/8+	714	131	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19203	JJ	5-11-18	CAROL M YOHO	GASTAR EXPLORATION USA INC	1/8+	713	205	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19204	JJ	5-11-18	DAYNA MARLENE YOHO	GASTAR EXPLORATION USA INC	1/8+	714	127	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19205	JJ	5-11-18	JEFFREY C YOHO	GASTAR EXPLORATION USA INC	1/8+	713	203	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19251	JJ	5-11-18	RAE SUZETTE BAKER	GASTAR EXPLORATION USA INC	1/8+	748	315	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19252	JJ	5-11-18	JOHN WILSON	GASTAR EXPLORATION USA INC	1/8+	749	522	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19502	JJ	5-11-18	SUSAN BLANCHE BEYSER	TH EXPLORATION LLC	1/8+	942	623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19893	JJ	5-11-18	WINIFRED G AND EDDIE G TURNER	TH EXPLORATION, LLC	1/8+	948	277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21041	JJ	5-11-18	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19176	KK	5-11-19	MAUNA MAXINE BEYSER	GASTAR EXPLORATION USA INC	1/8+	710	602	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19177	KK	5-11-19	NINA L KOVACS	GASTAR EXPLORATION USA INC	1/8+	710	594	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19185	KK	5-11-19	HARRIETT LODUTH FOLEY	GASTAR EXPLORATION USA INC	1/8+	710	598	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19186	KK	5-11-19	JOEL GLOVER	GASTAR EXPLORATION USA INC	1/8+	710	600	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
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10*19189	KK	5-11-19	SHERRY ANN MCPHERON	GASTAR EXPLORATION USA INC	1/8+	710	606	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
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10*19203	KK	5-11-19	CAROL M YOHO	GASTAR EXPLORATION USA INC	1/8+	713	205	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19204	KK	5-11-19	DAYNA MARLENE YOHO	GASTAR EXPLORATION USA INC	1/8+	714	127	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19205	KK	5-11-19	JEFFREY C YOHO	GASTAR EXPLORATION USA INC	1/8+	713	203	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
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10*19252	KK	5-11-19	JOHN WILSON	GASTAR EXPLORATION USA INC	1/8+	749	522	N/A	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19502	KK	5-11-19	SUSAN BLANCHE BEYSER	TH EXPLORATION LLC	1/8+	942	623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19893	KK	5-11-19	WINIFRED G AND EDDIE G TURNER	TH EXPLORATION, LLC	1/8+	948	277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21041	KK	5-11-19	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18722	LL	5-11-20	HIRAMS ESTATE FAMILY LIMITED LIABILITY LIMITED PARTNERSHIP	TH EXPLORATION LLC	1/8+	938	523	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19176	LL	5-11-20	MAUNA MAXINE BEYSER	GASTAR EXPLORATION USA INC	1/8+	710	602	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19177	LL	5-11-20	NINA L KOVACS	GASTAR EXPLORATION USA INC	1/8+	710	594	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19185	LL	5-11-20	HARRIETT LODUTH FOLEY	GASTAR EXPLORATION USA INC	1/8+	710	598	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19186	LL	5-11-20	JOEL GLOVER	GASTAR EXPLORATION USA INC	1/8+	710	600	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19187	LL	5-11-20	DAVID E GRAY	GASTAR EXPLORATION USA INC	1/8+	710	610	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19189	LL	5-11-20	SHERRY ANN MCPHERON	GASTAR EXPLORATION USA INC	1/8+	710	606	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19190	LL	5-11-20	SALLY LEE RIVERA	GASTAR EXPLORATION USA INC	1/8+	710	590	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19191	LL	5-11-20	SHARLA BETH WEAVER	GASTAR EXPLORATION USA INC	1/8+	710	608	N/A	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

WW-6A1 Supplement

Operator's Well No. Bryan N - 13HU

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*19192	LL	5-11-20	JAMES E YOHO	GASTAR EXPLORATION USA INC	1/8+	714	129	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19201	LL	5-11-20	DANIEL K YOHO	GASTAR EXPLORATION USA INC	1/8+	714	125	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19202	LL	5-11-20	DEBORAH L WOOLEY	GASTAR EXPLORATION USA INC	1/8+	714	131	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19203	LL	5-11-20	CAROL M YOHO	GASTAR EXPLORATION USA INC	1/8+	713	205	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19204	LL	5-11-20	DAYNA MARLENE YOHO	GASTAR EXPLORATION USA INC	1/8+	714	127	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19205	LL	5-11-20	JEFFREY C YOHO	GASTAR EXPLORATION USA INC	1/8+	713	203	N/A	N/A	N/A	N/A	N/A	735/263 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19251	LL	5-11-20	RAE SUZETTE BAKER	GASTAR EXPLORATION USA INC	1/8+	748	315	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19252	LL	5-11-20	JOHN WILSON	GASTAR EXPLORATION USA INC	1/8+	749	522	N/A	N/A	N/A	N/A	N/A	26/639 Gastar Exploration USA, Inc to Atinum Marcellus I LLC	32/362 Gastar Exploration Inc. and Atinum Marcellus I LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19502	LL	5-11-20	SUSAN BLANCHE BEYSER	TH EXPLORATION LLC	1/8+	942	623	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19893	LL	5-11-20	WINIFRED G AND EDDIE G TURNER	TH EXPLORATION, LLC	1/8+	948	277	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21041	LL	5-11-20	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Q088586011	MM	5-11-21	KAREN SUE CLYDE REED	NOBLE ENERGY, INC	1/8+	864	190	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC
Q088586003	MM	5-11-21	GENIE SUE THOMAS AND JOHN L HOLMES	NOBLE ENERGY, INC	1/8+	848	204	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC
Q088586010	MM	5-11-21	BRENDA FAYE AMD THOMAS PETRACK	NOBLE ENERGY, INC	1/8+	850	161	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC
Q088586002	MM	5-11-21	GAIL ANN YATES AND WESLEY J WOOD	NOBLE ENERGY, INC	1/8+	848	208	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC
Q088586005	MM	5-11-21	SHIRLEY YATES AND FREDDIE LEE HARTSELL	NOBLE ENERGY, INC	1/8+	848	212	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC
Q088586004	MM	5-11-21	BOYD DAIL JR AND MARLA YATES	NOBLE ENERGY, INC	1/8+	848	210	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC
Q088586001	MM	5-11-21	GUY YATES	NOBLE ENERGY, INC	1/8+	848	206	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC
Q088586007	MM	5-11-21	REBEKAH DRAYER AND CHRISTOPHER ELDRIDGE	NOBLE ENERGY, INC	1/8+	850	157	N/A	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*21041	NN	5-11-5.2	SHERY AND RANDEN RITCHEA	TH EXPLORATION, LLC	1/8+	949	365	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21224	NN	5-11-5.2	RICKEY LYNN CROSS & VICTORIA ROSE CROSS	TH EXPLORATION LLC	1/8+	939	589	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18722	OO	5-11-3	HIRAMS ESTATE FAMILY LIMITED LIABILITY LIMITED PARTNERSHIP	TH EXPLORATION LLC	1/8+	938	523	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19126	OO	5-11-3	KEVIN R. CORLEY AND ANITA L. CORLEY, HUSBAND AND WIFE	CHEVRON USA INC	1/8+	859	47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19127	PP	5-11-2	WALTER C. RINE AND CHERYL ANN RINE	CHEVRON USA INC	1/8+	859	49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19127	QQ	5-11-2.2	WALTER C. RINE AND CHERYL ANN RINE	CHEVRON USA INC	1/8+	859	49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19127	RR	5-11-2.1	WALTER C. RINE AND CHERYL ANN RINE	CHEVRON USA INC	1/8+	859	49	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19164	RR	5-11-2.1	KATHERINE A STALNAKER	CHEVRON USA INC	1/8+	839	486	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19169	RR	5-11-2.1	DANIEL L RINE	CHEVRON USA INC	1/8+	839	260	N/A	N/A	N/A	N/A	N/A	N/A	N/A	40/127 Chevron USA Inc. to TH Exploration, LLC
10*47051.089.0	SS	5-11-1.1	LARRY W DUNLAP AND BARBARA E DUNLAP	TH EXPLORATION LLC	1/8+	864	148	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19167	TT	5-11-1.2	JAY A CONNER PATTY LOUISE CONNER	CHESAPEAKE APPALACHIA LLC	1/8+	724	156	N/A	N/A	N/A	N/A	N/A	N/A	30/392 Chesapeake Appalachia, LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19219	UU	5-8-9.1	SCOTT E AND TAMMY SUE JACKSON	TRIENERGY HOLDINGS, LLC	1/8+	731	102	N/A	N/A	N/A	N/A	N/A	25/449 TriEnergy Holdings LLC to NPAR, LLC	756/332 NPAR, LLC to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*47051.105.0	VV	5-8-9	JAMES B JACKSON JR AND MARION L JACKSON	TH EXPLORATION LLC	1/8+	859	478	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19168	WW	5-11-1.5	PAUL AND SANDY WHITT	CHESAPEAKE APPALACHIA LLC	1/8+	715	565	N/A	N/A	N/A	N/A	N/A	N/A	30/392 Chesapeake Appalachia, LLC, to Chevron USA Inc	40/127 Chevron USA Inc to TH Exploration, LLC
10*19167	XX	5-11-1.3	JAY A CONNER PATTY LOUISE CONNER	CHESAPEAKE APPALACHIA LLC	1/8+	724	156	N/A	N/A	N/A	N/A	N/A	N/A	30/392 Chesapeake Appalachia, LLC, to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC
10*47051.089.0	YY	5-11-1.4	LARRY W DUNLAP AND BARBARA E DUNLAP	TH EXPLORATION LLC	1/8+	864	148	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Q075705000	ZZ	5-11-1.6	DEBRA MORRIS	NOBLE ENERGY, INC	1/8+	797	617	N/A	N/A	N/A	N/A	34/167 Noble Energy Inc to CNX Gas Company LLC	37/169 CNX Gas Company LLC to Noble Energy Inc	38/297 Noble Energy, Inc. to HG Energy II Appalachia, LLC	962/488 HG Energy II Appalachia, LLC to TH Exploration, LLC
10*19174	AAA	5-11-1.7	WILLIAM S ADAMS MARY K ADAMS	TRIENERGY HOLDINGS, LLC	1/8+	711	318	N/A	N/A	24/430 TriEnergy Holdings, LLC to NPAR, LLC	24/466 AB Resources LLC and NPAR LLC to Chief Exploration & Development, LLC and Radler 2000 Limited Partnership	25/1 Chief Exploration & Development, LLC, Chief Oil and Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources to Chevron USA Inc	25/105 Chief Exploration & Development, LLC, Chief Oil & Gas, LLC, Radler 2000 Limited Partnership and Enerplus Resources (USA) Corporation to Chevron USA Inc.	756/332 NPAR LLC to Chevron USA Inc	40/127 Chevron USA Inc. to TH Exploration, LLC

WW-6A1 Supplement

Operator's Well No. Bryan N - 13HU

Lease No.	Tags	Parcel	Lessor	Lessee	Royalty	Book	Pg	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*19173	BBB	5-11-1	RANDLYN MOORE LINDA G MOORE	CHESAPEAKE APPALACHIA LLC	1/8+	717	46	N/A	N/A	N/A	24/204 Chesapeake Appalachia, LLC to Statoil USA Onshore Properties, Inc	25/582 Chesapeake Appalachia, LLC to Statoil USA Onshore Properties, Inc	30/392 Chesapeake Appalachia, LLC, to Chevron USA Inc	30/404 Statoil USA Onshore Properties, Inc to Chevron USA	40/127 Chevron USA Inc. to TH Exploration, LLC
10*19184	BBB	5-11-1	RANDI L PECK	CHESAPEAKE APPALACHIA LLC	1/8+	719	26	N/A	N/A	N/A	24/204 Chesapeake Appalachia, LLC to Statoil USA Onshore Properties, Inc	25/582 Chesapeake Appalachia, LLC to Statoil USA Onshore Properties, Inc	30/392 Chesapeake Appalachia, LLC, to Chevron USA Inc	30/404 Statoil USA Onshore Properties, Inc to Chevron USA	40/57 Chevron USA Inc to TH Exploration LLC

*** Force pool interest

MICHAEL HURAN
BRIDGTON RESOURCES
5851 ELLSBORTH AVENUE, #1
PITTSBURGH PA 15232-1707

BOOK 0040 PAGE 0127

STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

Marshall County
Jon Pest, Clerk
Instrument 1428355
08/16/2017 @ 12:08:49 PM
ASSIGNMENTS
Book 40 @ Page 127
Pages Recorded 25
Recording Cost \$ 33.00

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this day of August, 2017 (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 the 1st day of August, 2017 (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", attached hereto and made a part hereof (hereinafter the "Leases"), less and except certain overriding royalty interests and exclusions; 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, subject to certain overriding royalty interests and less and except certain exclusions.

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:

I. 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 excepts and reserves from this Assignment the following:

A. 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 Comell 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, and

B. As to each of the Leases and all oil, gas, and associated hydrocarbons produced, saved and sold thereunder, an overriding royalty interest equal to the difference between 82% and the

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Office of Oil and Gas

APR 9 2018

WV Department of
Environmental Protection



47 05 10 20 30

47 05 10 20 30

April 6, 2018

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

RE: Bryan N-13HU

Subject: Road Crossing Letter

Dear Laura:

Tug Hill Operating, LLC will not be drilling, extracting or producing any minerals under any WV County or State Routes in the area reflected on the Bryan N-13HU well plat.

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

Sincerely,

Amy L. Miller
Permitting Specialist – Appalachia Region

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Office of Oil and Gas

APR 9 2018

WV Department of
Environmental Protection

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

Date of Notice Certification: 04/06/2018

API No. 47- 051 - 02030
Operator's Well No. Bryan N-13HU
Well Pad Name: Bryan

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>519,136.53</u>
County: <u>Marshall</u>	Northing: <u>4,402,887.17</u>
District: <u>Franklin</u>	Public Road Access: <u>Rines Ridge Road</u>
Quadrangle: <u>Powhatan Point: 7.5'</u>	Generally used farm name: <u>CNX Land Resources, Inc.</u>
Watershed: <u>Fish Creek (HUC-10)</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>
<p>RECEIVED Office of Oil and Gas</p> <p>APR 9 2018</p> <p>WV Department of Environmental Protection</p>	

Required Attachments:

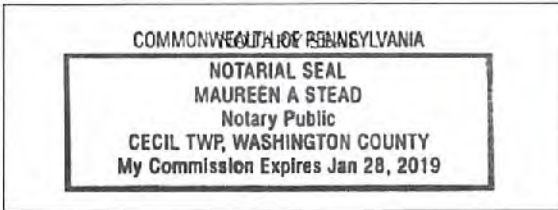
The Operator shall attach to this Notice Certification Form all Notice Forms and Certifications of Notice that have been provided to the required parties and/or any associated written waivers. For the Public Notice, the operator shall attach a copy of the Class II Legal Advertisement with publication 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.

WW-6AC
(1/12)

Certification of Notice is hereby given:

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

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



Subscribed and sworn before me this 6 day of APRIL 2018
Maureen A Stead Notary Public
 My Commission Expires 1/28/19

Oil and Gas Privacy Notice:

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

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Office of Oil and Gas

APR 9 2018

WV Department of
Environmental Protection

09/07/2018

WW-6A
(9-13)

API NO. 47- 51 - 02030
OPERATOR WELL NO. Bryan N-13HU
Well Pad Name: Bryan

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: 4/6/2018 **Date Permit Application Filed:** 4/8/2018

Notice of:

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

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

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

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

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

SURFACE OWNER(s)

Name: CNX Land Resources, Inc. (Pad)
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

Name: Greg and Christina Riddle (Road)
Address: 4205 Rines Ridge Road
Proctor, WV 26055

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

Name: Ray E. and Katherine L. Minor
Address: 4193 Rines Ridge Road
Proctor, WV 26055

Name: Michael R. Bryan *see attached list
Address: 195 Isaiah Drive
Proctor, WV 26055

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: Leatherwood, Inc.
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317-6506

COAL OPERATOR

Name: _____
Address: _____

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

Name: *See attached sheet
Address: _____

OPERATOR OF ANY NATURAL GAS STORAGE FIELD

Name: _____
Address: _____

*Please attach additional forms if necessary

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Office of Oil and Gas

APR 9 2018

WV Department of
Environmental Protection

09/07/2018

APR 9 2018

WV Department of
Environmental ProtectionAPI NO. 47- 51-02030
OPERATOR WELL NO. Bryan N-13HU
Well Pad Name: BryanWW-6A
(8-13)**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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WV Department of
Environmental Protection

API NO. 47- 51-02030
OPERATOR WELL NO. Bryan N-13HU
Well Pad Name: Bryan

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

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.**

09/07/2018

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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WV Department of
Environmental Protection

09/07/2018

WW-6A
(8-13)

API NO. 47- 51 - 02030
OPERATOR WELL NO. Bryan N-13HU
Well Pad Name: Bryan

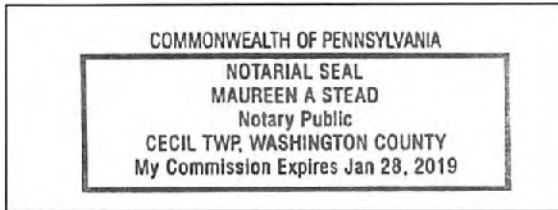
Notice is hereby given by:

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

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Cancosburg, 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 6 day of APRIL 2018
Maureen A Stead Notary Public
My Commission Expires 1/28/19

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Office of Oil and Gas

APR 9 2018

WV Department of Environmental Protection
09/07/2018

Operator Well No. Bryan N-13HU

WW-6A Notice of Application

Attachment 1 of 1

Surface Owner(s) Road and Other Disturbances:

Name: Brenda K. Bryan
Address: 1971 Rines Ridge Road
Proctor, WV 26055

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WV Department of
Environmental Protection

09/07/2018

WW-6A

Supplement Pg. 1A

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

WATER WELL REPORT

Well: BRYAN No. N-13HU
 District: Franklin
 County: Marshall
 State: WV

There appears to be Five (5) possible water sources within 2,000 feet of the above referenced well location.

Topo spot #1 (Possible Spring) TM 15 Par.6 Joseph & Joann Kramer 304-845-0896 3303 Rines Ridge Rd. Proctor, WV 26055	Topo Spot # 2 (Spring) TM 15 Par. 9 CNX Land Resources, LLC 724-485-4000, 713-893-4476 1000 Consol Energy Dr. Canonsburg, PA 15317	Topo Spot # 3 (Water Well) TM 16 Par. 23 CNX Land Resources, LLC 724-485-4000, 713-893-4476 1000 Consol Energy Dr. Canonsburg, PA 15317
Topo Spot # 4 (Water Trough) TM 16 Par. 23 CNX Land Resources, LLC 724-485-4000, 713-893-4476 1000 Consol Energy Dr. Canonsburg, PA 15317	Topo Spot # 5 (Water Trough) TM 15 Par. 9 CNX Land Resources, LLC 724-485-4000, 713-893-4476 1000 Consol Energy Dr. Canonsburg, PA 15317	

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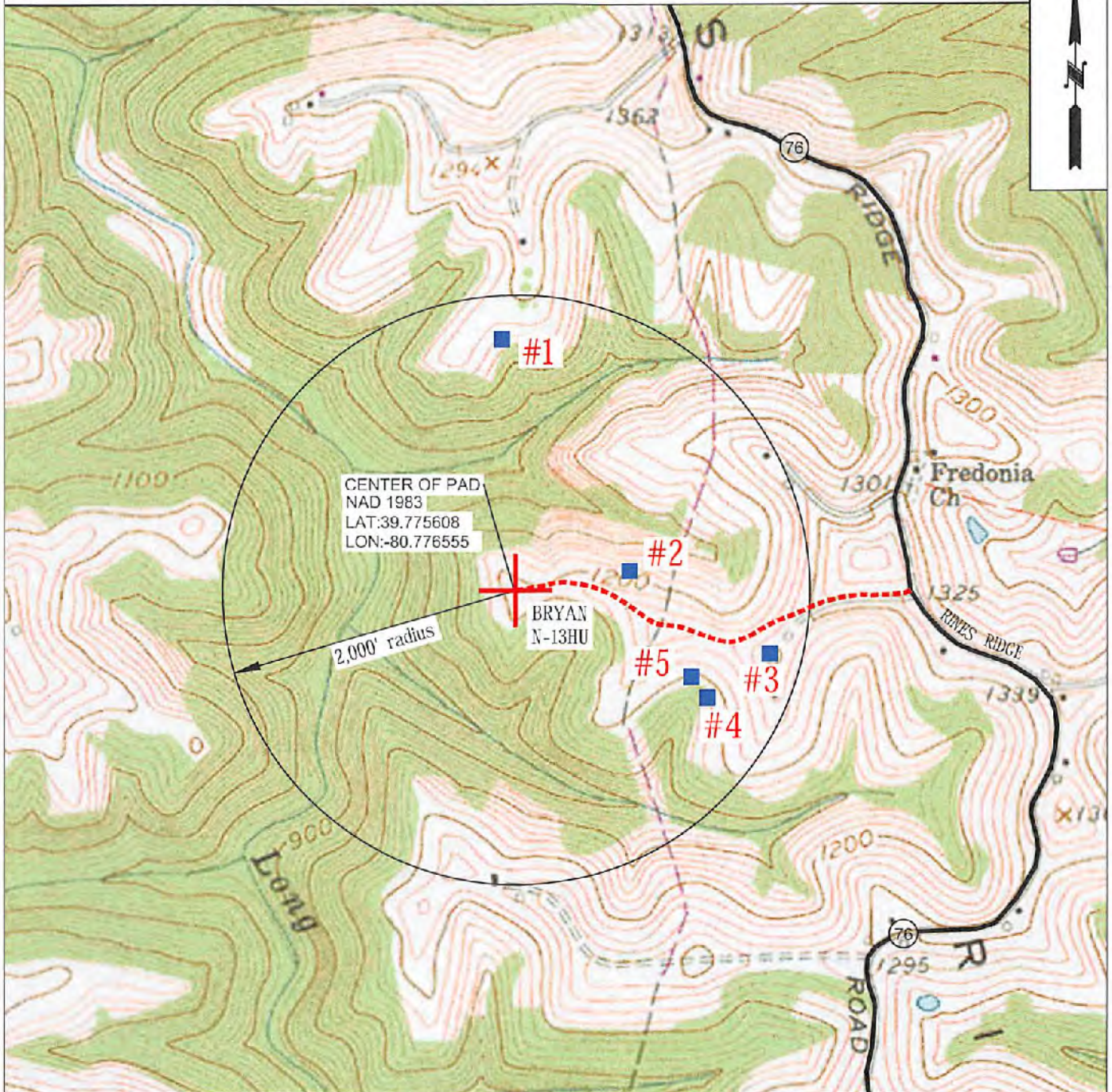
WW-6A

WV Department of
Environmental Protection

PROPOSED BRYAN N-13HU

SUPPLEMENT PG 1

There appears to be Five (5) possible water sources within 2,000'.



CENTER OF PAD
NAD 1983
LAT:39.775608
LON:-80.776555

BRYAN
N-13HU

2,000' radius



OPERATOR	494510851	TOPO SECTION	LEASE NAME
TUG HILL OPERATING, LLC 380 SOUTHPOINTE BLVD SUITE 200 CANONSBURG, PA 15317		POWHATAN POINT 7.5'	BRYAN
SCALE:		DATE:	
1" = 1000'		DATE: 12/12/17	

51-02030

WW-6A3
(1/12)

Operator Well No. Bryan N-13HU

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: 8/10/2017 **Date of Planned Entry:** 8/17/2017

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: CNX Land Resources, Inc.
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

Name: Ray E. and Katherine L. Minor
Address: 4193 Rines Ridge Road
Proctor, WV 26055

Name: Michael R. and Brenda K. Bryan
Address: 195 Isaiah Drive
Proctor, WV 26055 *See Attachment

COAL OWNER OR LESSEE

Name: Leatherwood, Inc.
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317-6506

MINERAL OWNER(s)

Name: Greg and Christina Riddle
Address: 4205 Rines Ridge Road
Proctor, WV 26055

*please attach additional forms if necessary

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Notice is hereby given:

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

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.7756312; -80.7768011</u>
County: <u>Marshall</u>	Public Road Access: <u>Rines Ridge Road (County Route 78)</u>
District: <u>Franklin</u>	Watershed: <u>(HUC-10) Fish Creek</u>
Quadrangle: <u>Powhatan Point</u>	Generally used farm name: <u>Michael and Brenda Bryan</u>

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

Notice is hereby given by:

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

Oil and Gas Privacy Notice:

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

09/07/2018

Operator Well No. Bryan N-13HU

WW-6A3 Notice of Entry for Plat Survey

Attachment 1 of 1

Surface Owner(s):

Name: Greg and Christina Riddle
Address: 4205 Rines Ridge Road
Proctor, WV 26055

Mineral Owner(s):

Name: Ray E. and Katherine L. Minor
Address: 4193 Rines Ridge Road
Proctor, WV 26055

Name: Michael R. Bryan
Address: 195 Isaiah Drive
Proctor, WV 26055

Name: Brenda K. Bryan
Address: 1971 Rines Ridge Road
Proctor, WV 26055

Name: Wesley Russell Bryan II
Address: P.O. Box 1107
Sunbury, OH 43074

Name: Appalachian Energy Holdings I, LP
Address: 14 Dunmoyle Place
Pittsburgh, PA 15217

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WW-6A5
(1/12)

Operator Well No. Bryan N-13HU

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

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

Date of Notice: 04/06/2018 **Date Permit Application Filed:** 04/08/2018

Delivery method pursuant to West Virginia Code § 22-6A-16(c)

CERTIFIED MAIL HAND
RETURN RECEIPT REQUESTED DELIVERY

Pursuant to W. Va. Code § 22-6A-16(c), no later than the date for filing the permit application, an operator shall, by certified mail return receipt requested or hand delivery, give the surface owner whose land will be used for the drilling of a horizontal well notice of the planned operation. The notice required by this subsection shall include: (1) A copy of this code section; (2) The information required to be provided by subsection (b), section ten of this article to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. (d) The notices required by this section shall be given to the surface owner at the address listed in the records of the sheriff at the time of notice.

Notice is hereby provided to the SURFACE OWNER(s)

(at the address listed in the records of the sheriff at the time of notice):

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

Name: Ray E. and Katherine L. Minor
Address: 4193 Rines Ridge Road
Proctor, WV 26055 *See attached sheet

Notice is hereby given:

Pursuant to West Virginia Code § 22-6A-16(c), notice is hereby given that the undersigned well operator has developed a planned operation on the surface owner's land for the purpose of drilling a horizontal well on the tract of land as follows:

State:	<u>West Virginia</u>	UTM NAD 83	Easting:	<u>519,138.53</u>
County:	<u>Marshall</u>		Northing:	<u>4,402,877.17</u>
District:	<u>Franklin</u>	Public Road Access:	<u>Rines Ridge Road</u>	
Quadrangle:	<u>Powhatan Point 7.5'</u>	Generally used farm name:	<u>CNX Land Resources, Inc.</u>	
Watershed:	<u>Fish Creek (HUC-10)</u>			

This Notice Shall Include:

Pursuant to West Virginia Code § 22-6A-16(c), this notice shall include: (1) A copy of this code section; (2) The information required to be provided by W. Va. Code § 22-6A-10(b) to a surface owner whose land will be used in conjunction with the drilling of a horizontal well; and (3) A proposed surface use and compensation agreement containing an offer of compensation for damages to the surface affected by oil and gas operations to the extent the damages are compensable under article six-b of this chapter. 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 Operator: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: amiller@tug-hill.com

Address: 380 Southpointe Boulevard, 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.

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WV Department of
Environmental Protection

09/07/2018

Operator Well No. Bryan N-13HU

WW-6A5 NOTICE OF PLANNED OPERATION

ATTACHMENT 1 OF 1

Surface Owner(s):

Greg and Christina Riddle
4205 Rines Ridge Road
Proctor, WV 26055

Michael R. and Brenda K. Bryan
195 Isaiah Drive
Proctor, WV 26055

Brenda K. Bryan
1971 Rines Ridge Road
Proctor, Wv 26055

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WV Department of
Environmental Protection

05/07/2018

51-02030



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

September 7, 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 Bryan Pad, Marshall County
Bryan N-13HU Well site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2017-0528 which has been issued to Tug Hill Operating, LLC for access to the State Road for a well site located off of Marshall County Route 76 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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WV Department of
Environmental Protection

09/07/2018



PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

Well No. Bryan N-13HU

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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Office of Oil and Gas

APR 9 2018

WV Department of
Environmental Protection

**WEST VIRGINIA
COUNTY MAP**



**WVDEP 00G
ACCEPTED AS-BUILT**

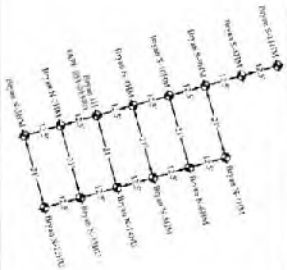
WDL 10 / 31 / 2017

Bryan W
Site Design, Co
Erosion and Sed
Tug Hill
Marsh
Frank
Latitude
Longitude
Lower Fish C

Exhibit A: Final Des

Site Elevation
WV.N.S.NAD 83 N: 467214.75
WV.N.S.NAD 83 E: 1021141.95
WV.N.S.NAD 27 N: 1624893.44
WV.N.S.NAD 27 E: 1641181.11
L.M. NAD 83: 467200.00
L.M. NAD 83: 1021200.00
L.M. NAD 27: 1624900.00
L.M. NAD 27: 1641200.00
UTM 17 Pseudo North: 4402990.00
UTM 17 Pseudo East: 119100.00

Center of Well Pit
WV.N.S.NAD 83 N: 467202.62
WV.N.S.NAD 83 E: 1021182.62
WV.N.S.NAD 27 N: 1624798.61
WV.N.S.NAD 27 E: 1641181.11
L.M. NAD 83: 467200.00
L.M. NAD 83: 1021200.00
L.M. NAD 27: 1624800.00
L.M. NAD 27: 1641200.00
UTM 17 Pseudo North: 442588.27
UTM 17 Pseudo East: 119100.00



Boone Station	Boone Station	Boone Station	Boone Station	Boone Station
WV.N.S.NAD 83 N: 467214.75	WV.N.S.NAD 83 N: 467222.33	WV.N.S.NAD 83 N: 467110.47	WV.N.S.NAD 83 N: 467106.42	WV.N.S.NAD 83 N: 467106.42
WV.N.S.NAD 83 E: 1021141.95	WV.N.S.NAD 83 E: 1021150.50	WV.N.S.NAD 83 E: 1020977.22	WV.N.S.NAD 83 E: 1020970.54	WV.N.S.NAD 83 E: 1020970.54
WV.N.S.NAD 27 N: 1624893.44	WV.N.S.NAD 27 N: 1624861.56	WV.N.S.NAD 27 N: 1624114.71	WV.N.S.NAD 27 N: 1624114.71	WV.N.S.NAD 27 N: 1624114.71
WV.N.S.NAD 27 E: 1641181.11	WV.N.S.NAD 27 E: 1641181.11	WV.N.S.NAD 27 E: 1641181.11	WV.N.S.NAD 27 E: 1641181.11	WV.N.S.NAD 27 E: 1641181.11
L.M. NAD 83: 467200.00	L.M. NAD 83: 467200.00	L.M. NAD 83: 467200.00	L.M. NAD 83: 467200.00	L.M. NAD 83: 467200.00
L.M. NAD 83: 1021200.00	L.M. NAD 83: 1021200.00	L.M. NAD 83: 1021200.00	L.M. NAD 83: 1021200.00	L.M. NAD 83: 1021200.00
L.M. NAD 27: 1624900.00	L.M. NAD 27: 1624900.00	L.M. NAD 27: 1624900.00	L.M. NAD 27: 1624900.00	L.M. NAD 27: 1624900.00
L.M. NAD 27: 1641200.00	L.M. NAD 27: 1641200.00	L.M. NAD 27: 1641200.00	L.M. NAD 27: 1641200.00	L.M. NAD 27: 1641200.00
UTM 17 Pseudo North: 4402990.00	UTM 17 Pseudo North: 4402990.00	UTM 17 Pseudo North: 4402990.00	UTM 17 Pseudo North: 4402990.00	UTM 17 Pseudo North: 4402990.00
UTM 17 Pseudo East: 119100.00	UTM 17 Pseudo East: 119100.00	UTM 17 Pseudo East: 119100.00	UTM 17 Pseudo East: 119100.00	UTM 17 Pseudo East: 119100.00



Station	Easting (EAD)	Northing (NAD)
Site Entrance	467202.62	1021182.62
Center of Well Pit	467202.62	1021182.62

Project Contacts

Site Illustration:
Leadley White - Regulatory Analyst
724-445-2000 OFF 864-645-6708 Cell
814-243-2580 OFF

Geist Radio - VP President
814-243-2580 OFF

Site Illustration:
Leadley White - Regulatory Analyst
724-445-2000 OFF 864-645-6708 Cell
814-243-2580 OFF

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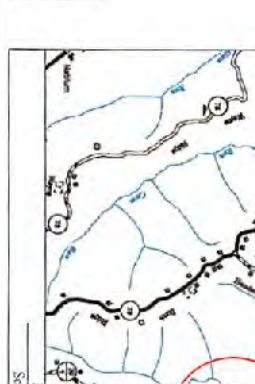
Site Illustration:
Leadley White - Regulatory Analyst
724-445-2000 OFF 864-645-6708 Cell
814-243-2580 OFF

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814-243-2580 OFF

Site Illustration:
Leadley White - Regulatory Analyst
724-445-2000 OFF 864-645-6708 Cell
814-243-2580 OFF

Well Pad Site

Construction Plan, &
 Instrument Control Plans
 Operating
 Marshall County
 Franklin District
 39.77560812°
 80.77655533°
 Lower Fish Creek Watershed

Sign: Issue for Permitting

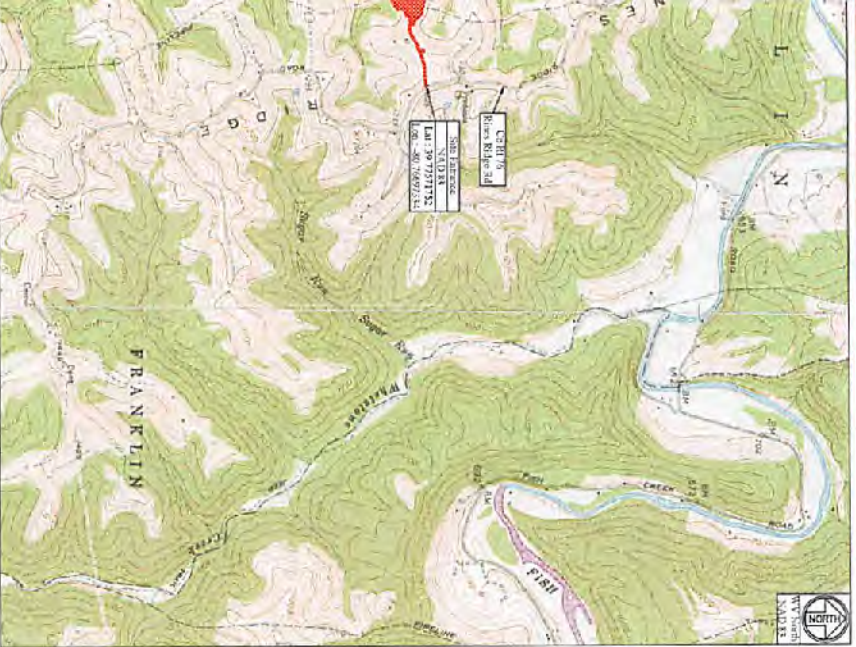
Pertinent Site Information
 Bryan Well Pad Site
 Emergency Number: 304-845-1920
 Franklin District, Marshall County, WV
 Watershed: Lower Fish Creek Watershed
 Tug Hill Contact Number: 1-817-632-3400

Franklin District, Marshall County							
Owner	1/4-3/4 Acre	3/4-1 Acre	1-1.99 Acre	2-4.99 Acres	5-9.99 Acres	10-49.99 Acres	Total (Acres)
Kay Thomas et al	16.33	0.00	0.00	0.00	0.00	0.00	16.33
City of Claydon Mills	16.33	0.00	0.00	0.00	0.00	0.00	16.33
City of Claydon Mills	16.33	0.00	0.00	0.00	0.00	0.00	16.33
City of Claydon Mills	16.33	0.00	0.00	0.00	0.00	0.00	16.33
City of Claydon Mills	16.33	0.00	0.00	0.00	0.00	0.00	16.33
City of Claydon Mills	16.33	0.00	0.00	0.00	0.00	0.00	16.33
City of Claydon Mills	16.33	0.00	0.00	0.00	0.00	0.00	16.33
City of Claydon Mills	16.33	0.00	0.00	0.00	0.00	0.00	16.33
City of Claydon Mills	16.33	0.00	0.00	0.00	0.00	0.00	16.33
City of Claydon Mills	16.33	0.00	0.00	0.00	0.00	0.00	16.33
City of Claydon Mills	16.33	0.00	0.00	0.00	0.00	0.00	16.33
City of Claydon Mills	16.33	0.00	0.00	0.00	0.00	0.00	16.33
City of Claydon Mills	16.33	0.00	0.00	0.00	0.00	0.00	16.33
City of Claydon Mills	16.33	0.00	0.00	0.00	0.00	0.00	16.33

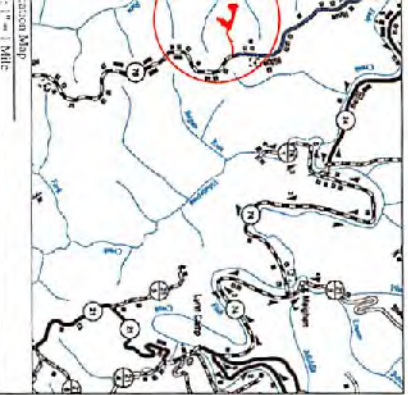
Boundary Corner	N - S	E - W	Area
W/2 - 1/4	62.31	42.55	2,658.45
N/4 - 1/4	62.31	135.42	8,428.99
E/4 - 1/4	15.39	114.42	1,751.47
Total	139.99	292.39	12,838.91

Well Pad Construction	1,201 Ac
Access Road Construction	2,709 Ac
Access Road Stripping	1,06 Ac
Log Skid Tracks	1,82 Ac
Access Road	1,034 Ac
Total Disturbed Area	6,830 Ac

Description	Vol (CY)	Spct (CY)	Disturb (CY)	Strip (CY)	Length of Strip
Well Pad Construction	2,287.24	18.25	2,287.24	0.00	N/A
Access Road Construction	1,913.81	5,010.05	1,913.81	0.00	N/A
Access Road Stripping	81.0	29.84	81.0	16,145	671
Well Pad Access Road	31.92	70,000	666.94	16,145	671
Well Pad Access Road	1,961.11	67,130	1,961.11	0.00	N/A
Well Pad Access Road	1,961.11	67,130	1,961.11	0.00	N/A
Well Pad Access Road	1,961.11	67,130	1,961.11	0.00	N/A
Well Pad Access Road	1,961.11	67,130	1,961.11	0.00	N/A
Total	11,618.84	116,293.84	6,207.08	7,296.08	13,348



Structure	Latitude (DD)	Longitude (DD)
Site Location	39.77560812	-80.77655533
Center of Well Pad	39.77560812	-80.77655533



I, the undersigned, being a duly qualified and licensed Professional Engineer in the State of West Virginia, do hereby certify that the above is a true and correct copy of the plan as shown to me by the applicant for the same and that the same conforms to the provisions of the Code of West Virginia relating to the practice of the profession of engineering. My commission expires on 03-31-2022.

Zachary C. Summers
 Professional Engineer
 License No. 22214

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WV Department of
 Environmental Protection

Sheet	Description
1	Cover Sheet
V1	Schedule of Quantities
N1-N3	Site Notes
2	Pre-Construction Site Conditions
3	Site Soil Map
4	Cleaning Exhibit
5	Central Fish View
6	East Fish View
7	East Fish View
8	East Fish View
9	East Fish View
10	East Fish View
11-14	Cross Sections - Well Pad
15	Cross Sections - Tank Pad
16	Cross Sections - Access Road
17	Cross Sections - Access Road
G1-G2	Geotechnical Exhibit
L1	Landowner Disturbed Area Exhibit
S1	Site Reclamation
M1-M2	Production Exhibit
D1-D2	erosion and Sediment Control Details
K1	Well Details

Kelly Sullivan
 PROJECT MANAGER



TUG HILL
 OPERATING

THIS DOCUMENT
 PREPARED FOR
 TUG HILL
 OPERATING

Date
 08-29-2017

Revision
 Design

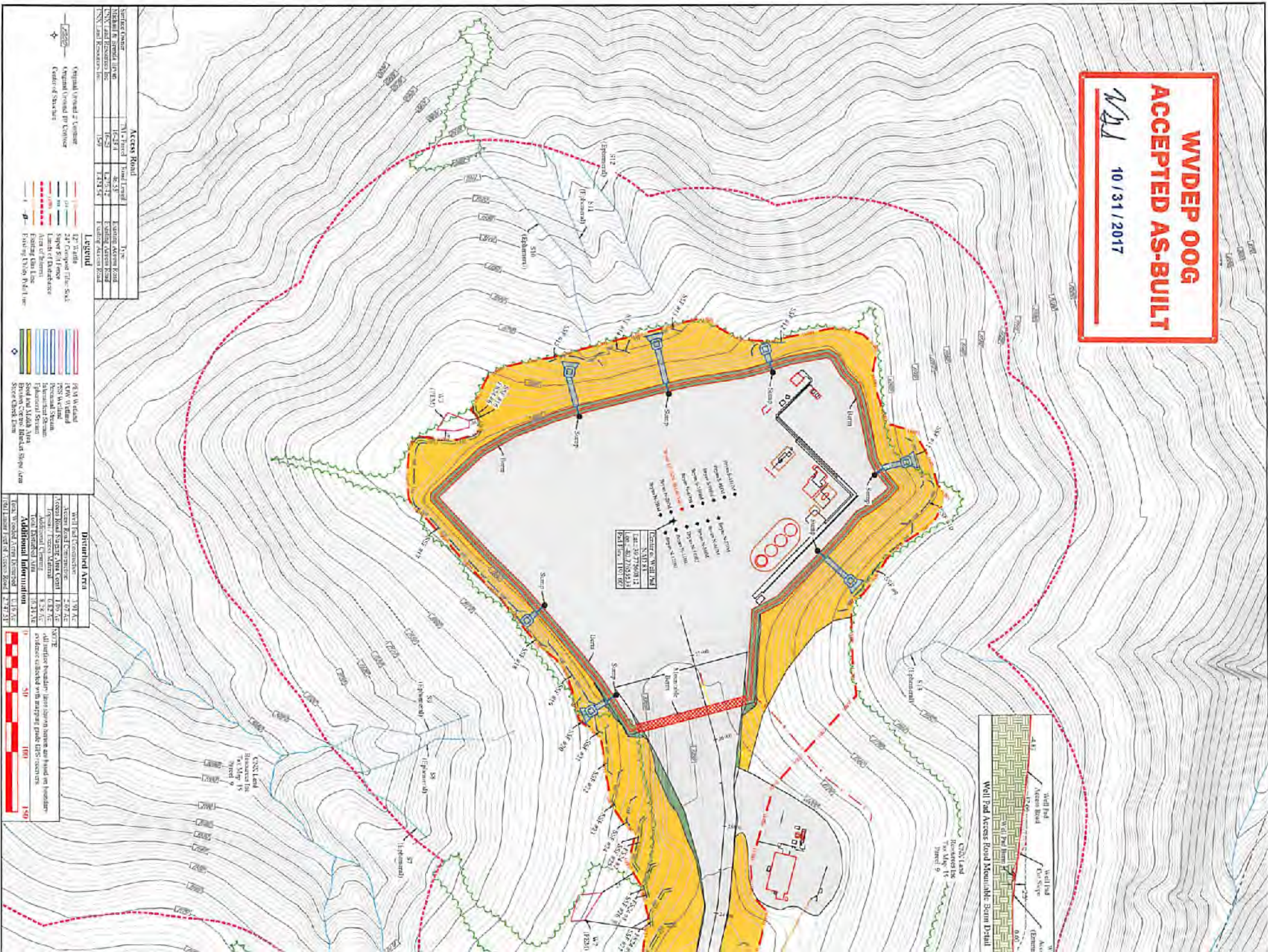
Cover Sheet
 Bryan Well Pad Site

Franklin District
 Marshall County, WV

Date: 08/29/2017
 Scale: As Shown
 Designer: JN, ZS
 Checker: JN, ZS
 Sheet 1 of 17

WVDEP OOG
ACCEPTED AS-BUILT

WJL 10/31/2017



Surface Elevation	Well Elevation	Type
512	512	Existing Access Road
511	511	Existing Access Road
510	510	Existing Access Road
509	509	Existing Access Road
508	508	Existing Access Road
507	507	Existing Access Road
506	506	Existing Access Road

LEGEND

	24' Gravel Filter-Soil
	Super Soil Filter
	Limit of Disturbance
	Area of Interest
	Proposed Utility Right-of-Way
	10% Wetland
	33% Wetland
	66% Wetland
	88% Wetland
	100% Wetland
	100% Wetland
	100% Wetland
	100% Wetland
	100% Wetland

Disturbed Area

20' x 10'	1.07 AC
30' x 10'	2.07 AC
40' x 10'	3.07 AC
50' x 10'	4.07 AC
60' x 10'	5.07 AC
70' x 10'	6.07 AC
80' x 10'	7.07 AC
90' x 10'	8.07 AC
100' x 10'	9.07 AC
110' x 10'	10.07 AC
120' x 10'	11.07 AC
130' x 10'	12.07 AC
140' x 10'	13.07 AC
150' x 10'	14.07 AC
160' x 10'	15.07 AC
170' x 10'	16.07 AC
180' x 10'	17.07 AC
190' x 10'	18.07 AC
200' x 10'	19.07 AC

Additional Information

1	20' x 10'	1.07 AC
2	30' x 10'	2.07 AC
3	40' x 10'	3.07 AC
4	50' x 10'	4.07 AC
5	60' x 10'	5.07 AC
6	70' x 10'	6.07 AC
7	80' x 10'	7.07 AC
8	90' x 10'	8.07 AC
9	100' x 10'	9.07 AC
10	110' x 10'	10.07 AC
11	120' x 10'	11.07 AC
12	130' x 10'	12.07 AC
13	140' x 10'	13.07 AC
14	150' x 10'	14.07 AC
15	160' x 10'	15.07 AC
16	170' x 10'	16.07 AC
17	180' x 10'	17.07 AC
18	190' x 10'	18.07 AC
19	200' x 10'	19.07 AC



PROPERTY SURVEY NO. 2017-0011
 DATE: 10/31/2017
 PROJECT: 10/31/2017
 DRAWN BY: WJL
 CHECKED BY: WJL

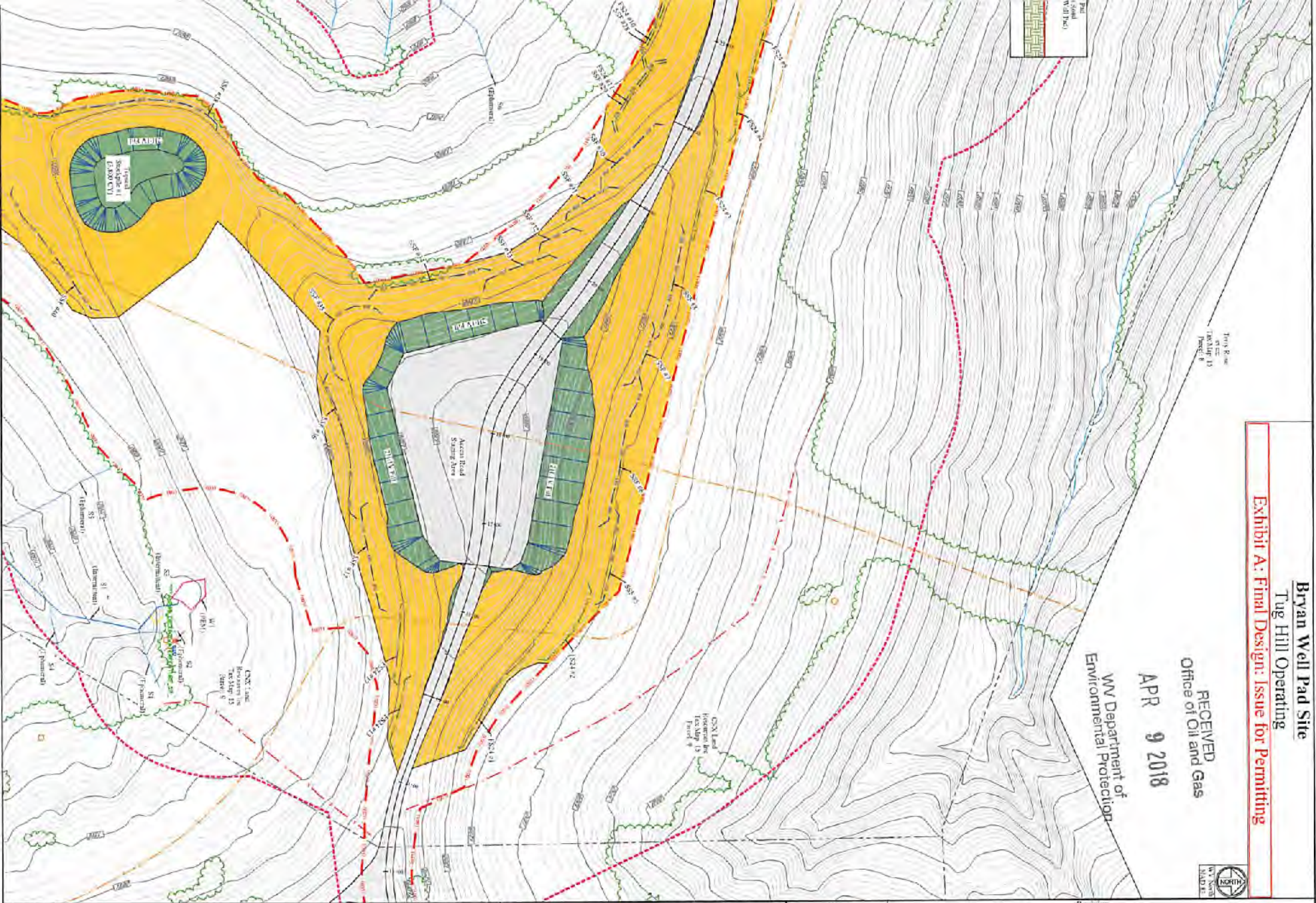


Bryan Well Pad Site
Tug Hill Operating

Exhibit A: Final Design: Issue for Permitting

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APR 9 2018

WV Department of
Environmental Protection



Revision
Design
Design: WVDEP Comments

Date
08-29-2017
10-30-2017

TUG HILL
OPERATING



THIS DOCUMENT
PREPARED FOR
TUG HILL
OPERATING

Kelly Sweeney
PROJECT MANAGER

Erosion and Sediment Control Plan
Bryan Well Pad Site

Franklin District
Marshall County, WV

DATE: 08/27/2017
SCALE: AS SHOWN
DESIGNER: JLS
DRAWN: JLS
SHEET 3 OF 17