



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

Harold D. Ward, Cabinet Secretary
www.dep.wv.gov

Tuesday, March 9, 2021
WELL WORK PERMIT
Horizontal 6A / New Drill

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

Re: Permit approval for VAN WINKLE S-14HM
47-051-02368-00-00

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: VAN WINKLE S-14HM
Farm Name: XCL MIDSTREAM OPERATING
U.S. WELL NUMBER: 47-051-02368-00-00
Horizontal 6A New Drill
Date Issued: 3/9/2021

PERMIT CONDITIONS 4705102368

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.

API Number: _____

PERMIT CONDITIONS 4705102368

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.

03/12/2021



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
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Harold D. Ward, Cabinet Secretary
dep.wv.gov

**ORDER
ISSUED UNDER
WEST VIRGINIA CODE, CHAPTER 22, ARTICLE 6A**

TO: Tug Hill Operating, LLC
380 Southpointe Boulevard, Plaza II., Suite 200
Canonsburg, PA 15317

DATE: February 24, 2021
ORDER NO.: 2021-W-1

INTRODUCTION

This Order (hereinafter "Order") is issued by the Office of Oil and Gas (hereinafter "OOG"), by and through its Chief, pursuant to the authority of W. Va. Code §§ 22-1-1, 22-6-1 and 22-6A-1 *et seq.* to Tug Hill Operating, LLC (hereinafter "Tug Hill" or "Operator"), collectively the "Parties."

FINDINGS OF THE CHIEF

In support of this Order, the Chief hereby finds the following:

1. OOG, an office within the West Virginia Department of Environmental Protection, is the agency with the duty and authority to execute and enforce W. Va. Code §22-6-1 and §22-6A-1 *et seq.*, and the rules and regulations promulgated thereunder.
2. Tug Hill is a "person" as defined by W. Va. Code §22-6-1(n), with a corporate address as 380 Southpointe Boulevard, Plaza II., Suite 200, Canonsburg, PA 15317.
3. On December 23, 2020, January 19, 22 and 25, 2021 Tug Hill submitted well work permit applications identified as API#s 47- 51-02347, 47-51-02348, 47-51-02349, 47-51-02350, 47-51-02351, 47-51-02352, 47-51-02353, 47-51-02354, 47-51-02355, 47-51-02356, 47-51-02357, 47-51-02358, 47-51-02359, 47-51-02360, 47-51-02361, 47-51-02362, 47-51-02363, 47-51-02364, 47-51-02365, 47-51-02366, 47-51-02367 and 47-51-02368. The wells are located on the Hunter Pethtel Pad in the Meade District of Marshall County, West Virginia.
4. On February 18, 2021 Tug Hill requested a waiver for Wetlands 03, 04, 07 and 08 as outlined in Attachment 1, from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit applications identified as API#s 47- 51-02347, 47-51-02348, 47-51-02349, 47-51-02350, 47-51-02351, 47-51-02352, 47-51-02353, 47-51-02354, 47-51-02355, 47-51-02356, 47-51-02357, 47-51-02358, 47-51-02359, 47-51-02360, 47-51-02361, 47-51-02362, 47-51-02363, 47-51-02364, 47-51-02365, 47-51-02366, 47-51-02367 and 47-51-02368. Wetland 03 will be excluded from the waiver due to their location inside of the construction area and total coverage under the ACOE permit.

CONCLUSIONS OF LAW

1. West Virginia Code §22-1-6(d) requires, in part, that “in addition to other powers, duties and responsibilities granted and assigned to the secretary by this chapter, the secretary is authorized and empowered to...(3) Enter private lands to make surveys and inspections for environmental protection purposes; to investigate for violations of statutes or rules which the Office of Oil and Gas is charged with enforcing; to serve and execute warrants and processes; to make arrests; issue orders, which for the purposes of this chapter include consent agreements; and to otherwise enforce the statutes or rules which the Office of Oil and Gas is charged with enforcing.”
2. West Virginia Code §22-6A-2(a)(6) requires, in part, that “Concomitant with the broad powers to condition the issuance of well work permits, the secretary should also have broad authority to waive certain minimum requirements of this article when, in his or her discretion, such waiver is appropriate: *Provided*, That the secretary shall submit a written report of the number of waivers granted to the Legislature commencing January 1, 2013, and each year thereafter.”
3. West Virginia Code §22-6A-12(b) requires, in part, that “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 Office of Oil and Gas 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 Office of Oil and Gas 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.”

ORDER

West Virginia Code §22-6A-12(b) requires, in part, that “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. The Office of Oil and Gas grants the request for a waiver for Wetlands 04, 07 and 08 from well location restriction requirements in W. Va. Code §22-6A-12(b) for the well work permit applications identified as API#s 47- 51-02347, 47-51-02348, 47-51-02349, 47-51-02350, 47-51-02351, 47-51-02352, 47-51-02353, 47-51-02354, 47-51-02355, 47-51-02356, 47-51-02357, 47-51-02358, 47-51-02359, 47-51-02360, 47-51-02361, 47-51-02362, 47-51-02363, 47-51-02364, 47-51-02365, 47-51-02366, 47-51-02367 and 47-51-02368. The Office of Oil and Gas hereby **ORDERS** that Tug Hill shall meet the following site construction and operational requirements for the Hunter Pethtel Well Pad:

- a. A berm shall be constructed around the perimeter of the pad to contain any potential spills and storm water runoff. Berm is to be at least twenty-four inches (24”) in height;
- b. Erosion control blankets shall be installed on all slopes and down gradient locations of the pad as erosion and sediment controlling BMPs;
- c. Wetlands 04 and 08 shall be protected by a layer of both Super Silt Fence and twenty four inch (24”) compost filter sock. This along with temporary and permanent vegetative cover will prevent sediment from reaching the wetlands;
- d. Disturbed areas not used for operations shall be seeded and mulched per the seeding tables in the WVDEP-OOG Erosion and Sediment Control Manual;
- e. Drill cuttings and associated drilling mud shall be disposed of in a permitted landfill;
- f. Waste generated by the flowback treatment systems shall be sent to offsite disposal at a permitted landfill;
- g. Weekly site inspections shall be conducted to monitor and maintain the integrity of the BMP storm water controls;
- h. Weekly storm water and spill prevention inspections shall be conducted focusing on storm water and spill prevention BMPs and maintenance of these BMPs;
- i. Inspections of the storm water and spill prevention measures shall be conducted after any major storm event defined as a half inch (½”) rain within any twenty-four (24) hour period;
- j. Pad inspections shall be conducted no less than once a week to identify and mitigate potential deficiencies;
- k. All records from inspections shall be maintained on site for the life of the project and be available upon request.

Thus ORDERED, the 24th day of February, 2021.

IN THE NAME OF THE STATE OF WEST VIRGINIA:

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

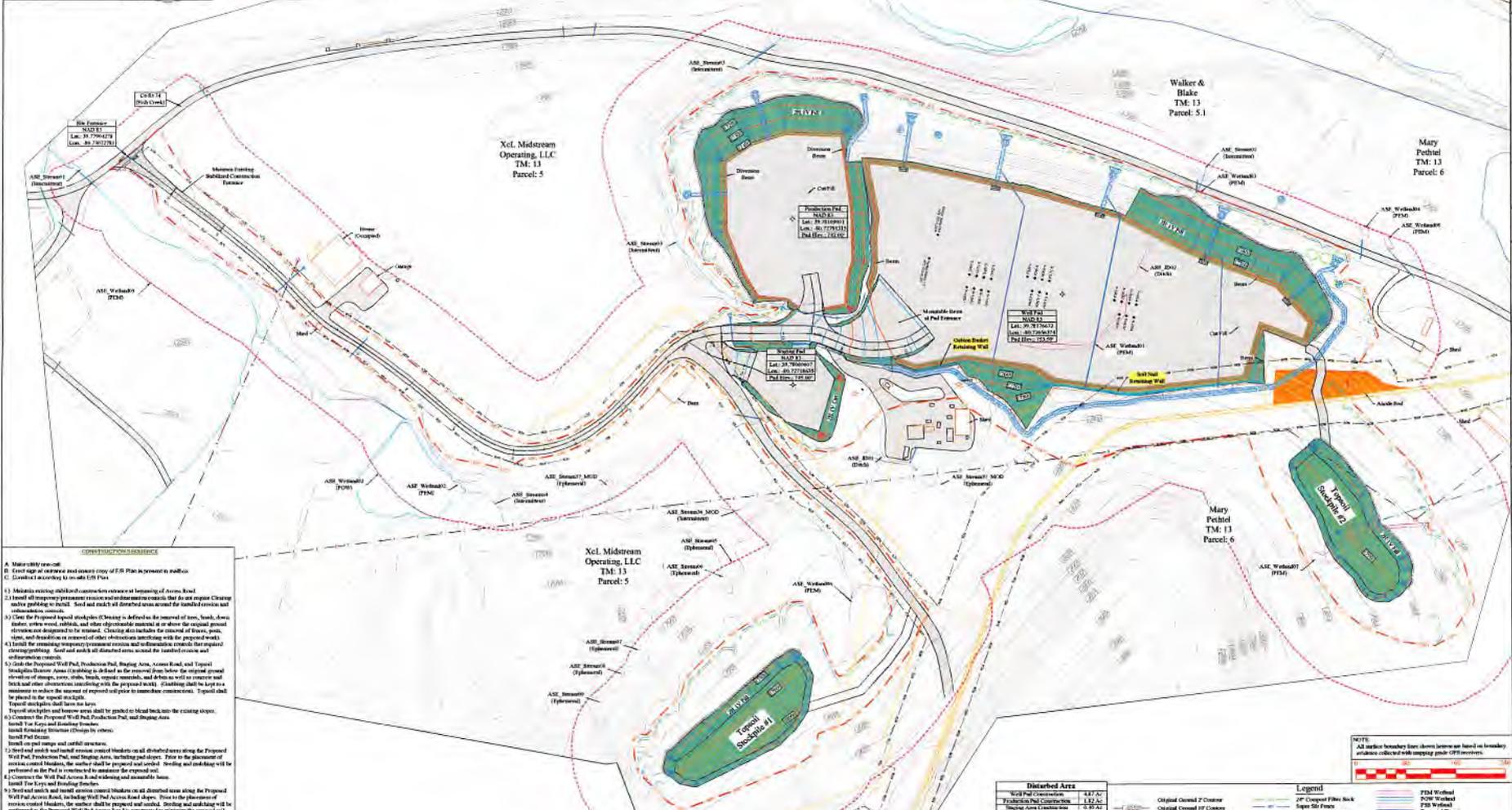
By: **James Martin** Digitally signed by James Martin
Date: 2021.02.24 13:14:36 -05'00'

JAMES A. MARTIN, CHIEF

Hunter Pethel Well Site
Tug Hill Operating
Exhibit A: Final Design: Issue for Permitting



Jurisdictional Ditch Impact (Linear Feet)				
Ditch and Impact Owner	Channel (LF)	Structure (LF (L))	Shore (LF (L))	Total Impact (LF)
ASE (2027/2028 Pad)	163.79	0	24,152.67	24,316.46
				Total Ditch Impacts: 24,316.46
Intermittent Stream Impact (Linear Feet)				
Stream and Impact Owner	Channel (LF)	Structure (LF (L))	Shore (LF (L))	Total Impact (LF)
ASE (2027/2028 Pad)	0	0	15.2	15.2
				Total Stream Impacts: 15.2
Wellpad Impact (Square Feet)				
Wellpad (Owner/Class)	ES (SF)	CS (SF)	MS (SF)	Total Impact (SF)
ASE Wellpad (PDM)	1016.7	0	0	1016.7
ASE Wellpad (PDM)	251.0	251.3	484.3	986.6
ASE Wellpad (Travel/Storage)	1,944.8	362.8	1,971.8	5,279.4
				Total Impact: 6,014.8
				Total Impact (Acres): 0.137



- CONSTRUCTION SEQUENCE**
- 1) Mobilize crew on-site.
 - 2) Erod edge of surface and access ways of ER Plan in accordance with plan.
 - 3) Construct all work for install ODF Pipe.
 - 4) Maintain existing shielded construction entrance of remaining Access Road.
 - 5) Install all temporary pavement, erosion and sediment controls that do not require clearing activity prior to install. Stock and stock all disturbed areas until all final erosion and sediment controls.
 - 6) Clear the Proposed Travel Storage (Storage) as defined in the removal of trees, brush, down timber, other wood, rubbish, and other objectionable material or show the original ground surface and designated to be retained. Clearing also includes the removal of stumps, poles, stumps, and branches in removal of other obstruction interfering with the proposed work.
 - 7) Install the remaining temporary pavement, erosion and sediment controls that require clearing activity. Stock and stock all disturbed areas around the installed erosion and sediment controls.
 - 8) Clear the Proposed Well Pad, Production Pad, Storage Area, Access Road, and Topsoil Stockpile (Storage) Areas (including to be defined as the removal from the original ground surface of stumps, poles, stumps, brush, rubbish, material, and debris as well as concrete and brick and other obstructions interfering with the proposed work). Clearing shall be kept to a minimum to reduce the amount of exposed soil prior to immediate construction. Topsoil shall be stored in the rippled storage.
 - 9) Topsoil stockpiles shall have no less than Topsoil depth and become stored shall be protected from the existing slope.
 - 10) Construct the Proposed Well Pad, Production Pad, and Storage Area (based on the Rippled Storage Stockpile) (Design by others).
 - 11) Install Topsoil Stockpile (Design by others).
 - 12) Stock and stock all disturbed areas until all disturbed areas during the Proposed Well Pad, Production Pad, and Storage Area, including pad edge. Prior to the placement of permanent erosion control features, the surface shall be prepared and seeded. Seeding and mulching will be performed on the Pad in accordance to maintain the exposed soil.
 - 13) Construct the Well Pad, Access Road, and existing and remaining Access Road (Design by others).
 - 14) Stock and stock and install erosion control features on all disturbed areas within the Proposed Well Pad, Access Road, including Well Pad Access Road Area. Prior to the placement of permanent erosion control features, the surface shall be prepared and seeded. Seeding and mulching will be performed on the Proposed Well Pad, Access Road in accordance to maintain the exposed soil.
 - 15) Erod all erosion and sediment controls in place until there is 10% growth over the entire site.
- The contractor shall be available from the above listed construction sequence without the written consent of the design engineer. The contractor shall provide a written explanation and provide an updated construction sequence when requested permission to deviate from the construction sequence.

Station Owner	TM (Parcel)	Well Length	Type	Additional Information
Xel Midstream Operating, LLC	13.5	1,346.0'	Well Pad Access Road	
Xel Midstream Operating, LLC	13.5	97.0'	Production Pad Access Road	From Wellpad Area (Disturbed) = 4,464.4'
Xel Midstream Operating, LLC	13.5	177.0'	Storage Area Access Road	From Wellpad Area (Disturbed) = 1,927.2'

Disturbed Area		Legend	
Well Pad Construction	4,477.2'	Original Control Z' Contour	Proposed Stream
Production Pad Construction	1,121.4'	Original Control Z' Contour	Intermittent Stream
Storage Area Construction	5,828.2'	Design Z' Contour	Artificially Modified Ditch
Access Road Construction	1,787.2'	Design Z' Contour	Ditch, open (Erosion Stop-Work)
Topsoil Stockpile	1,132.2'	Clear of Structure	Shore Check Point
Topsoil Stockpile #1	768.2'	Proposed Area	
Topsoil Stockpile #2	1,728.2'		

TUG HILL OPERATING
 THIS DOCUMENT PREPARED FOR TUG HILL OPERATING
 Keth Surveying
 Hunter Pethel Well Site
 Meade District
 Marshall County, WV
 Date: 12/04/2020
 Scale: As Shown
 Drawn by: ZS
 File No:
 Sheet 3 of 13

WW-6B
(04/15)

4705102368
API NO. 47-051
OPERATOR WELL NO. Van Winkle S-14HM
Well Pad Name: Hunter Pethtel

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

1) Well Operator: Tug Hill Operating, LLC 494510851 Marshall Meade Glen Easton 7.5'
Operator ID County District Quadrangle

2) Operator's Well Number: Van Winkle S-14HM Well Pad Name: Hunter Pethtel

3) Farm Name/Surface Owner: XcL Midstream Operating, LLC Public Road Access: County Route 74

4) Elevation, current ground: 754' Elevation, proposed post-construction: 754'

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

(b) If Gas Shallow Deep
Horizontal

6) Existing Pad: Yes or No Yes

Boney Stellys

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s): 1-21-2'
Marcellus is the target formation at a depth of 6148' - 6198', thickness of 50' and anticipated pressure of approx. 3800 psi.

8) Proposed Total Vertical Depth: 6,298'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 20,565'

11) Proposed Horizontal Leg Length: 13,937.10'

12) Approximate Fresh Water Strata Depths: 70; 415'

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: 870'

15) Approximate Coal Seam Depths: Sewickley Coal - 314' and Pittsburgh Coal - 409'

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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WV Department of
Environmental Protection

4705102368

WW-6B
(04/15)

API NO. 47-051 -
OPERATOR WELL NO. Van Winkle S-14HM
Well Pad Name: Hunter Pethel

18) CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	30"	NEW	BW	BW	120'	120'	259ft^3(CTS)
Fresh Water	13 3/8"	NEW	J55	54.5#	515'	515'	708ft^3(CTS)
Coal	13 3/8"	NEW	J55	54.5#	515'	515'	708ft^3(CTS)
Intermediate	9 5/8"	NEW	J55	36#	2,243'	2,243'	728ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	20,565'	20,565'	5236ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		6,053'	
Liners							

Bary Stillyz
1-21-21

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	30"	36"	1.0	2,333	1,866	CLASS A	1.2
Fresh Water	13 3/8"	17 1/2"	.38	2,740	2,192	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"	.352	3,520	2,816	SEE #24	1.19
Production	5 1/2"	8 7/8" _ 8 3/4"	.361	12,640	10,112	SEE #24	1.17/1.19
Tubing	2 3/8"		.19	11,200	8,960		
Liners							

PACKERS

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

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03/12/2021
Page 2 of 3

WW-6B
(10/14)

4705102368
API NO. 47-051 -
OPERATOR WELL NO. Van Winkle S-14HM
Well Pad Name: Hunter Pethtel

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

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

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

Well to be completed with approximately 35,000,000 lb proppant and 630,000 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

Bony Stiles
1-21-21

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 16.63 acres

22) Area to be disturbed for well pad only, less access road (acres): 4.87 acres

23) Describe centralizer placement for each casing string:

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

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

Sfc - Premium NE-1 + 2% CaCl; Int1 - Premium NE-1 + 1.5% CaCL + Flake; Int2 - Lead: Premium NE-1 + 5% BA-90 + .85% R-3 + 3% KCl + .75 gals/100sk FP-13L + 1% MPA-170 Tail: Premium NE-1 + .1% R-3 + 5% KCl + 1% CD-32 + .4% FL-52 + .2% ASA-301 + .6% Sodium Metasilicate; Kick Plug - Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L; Prod - Lead: 50:50 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .75 gal/100sk FP-13L Tail: 25:75 (Poz:Class H) + .3% R-3 + .3% MPA-250 + .375 gal/100sk FP-13L

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.

4705102368



Tug Hill Operating, LLC Casing and Cement Program

Van Winkle S-14HM

Casing

	String	Grade	Bit Size	Depth (Measured)	Cement Fill Up
Conductor	30"	BW	36"	120'	CTS
Surface	13 3/8"	J55	17 1/2"	515'	CTS
Intermediate	9 5/8"	J55	12 1/4"	2,243'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4"	20,565'	CTS

Cement

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

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

Intermediate: Premium NE-1 + 1% bwoc CaC12 + 46.5% Fresh Water – Intermediate Cement mixed at 15.6 ppg, Y=1.19

Kick Off Plug: Class H Cement + 1% CD-32 + .7% Sodium Metasilicate + .1% R-3 + .75 gal/100sk FP-13L - KOP Plug

Production: 50:50 Poz: Premium NE-1 + .1% bwoc ASA-301 + 60lb/sk ASCA-1 + .35% bwoc BA-10A + .25% bwoc MPA-170, 44 lb sack + .5% bwoc R-3 + .75 gals/100sk FP-13L – Production Cement mixed at 15.2ppg, Y = 1.19

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JAN 25 2021

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Environmental Protection

03/12/2021

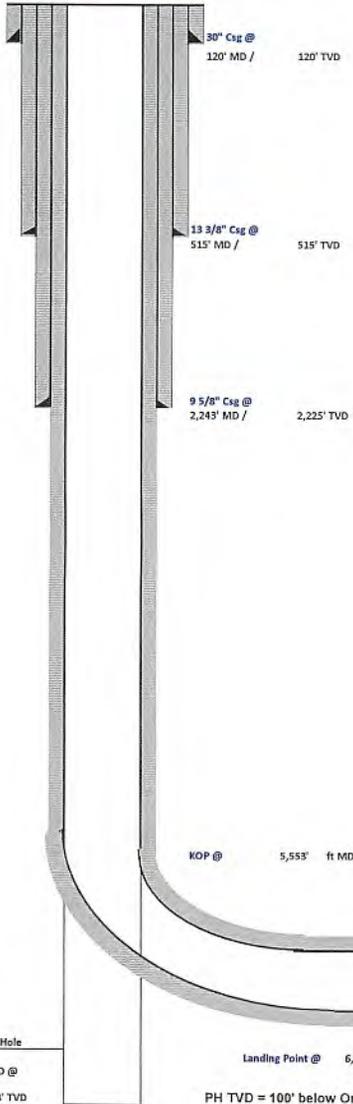


WELL NAME:	Van Winkle S-14HM		
STATE:	WV	COUNTY:	Marshall
DISTRICT:	Meade		
DF Elev:	754'	GL Elev:	754'
TD:	20,565'		
TH Latitude:	39.781716		
TH Longitude:	-80.726625		
BH Latitude:	39.74934		
BH Longitude:	-80.698576		

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	415
Sewickley Coal	314
Pittsburgh Coal	409
Big Lime	1635
Weir	1927
Berea	2126
Gordon	2396
Rhinestreet	5513
Genesee/Burkett	6018
Tully	6045
Hamilton	6080
Marcellus	6148
Landing Depth	6183
Onondaga	6198
Pilot Hole Depth	6298

CASING SUMMARY							
Type	Hole Size (in)	Csg Size (in)	Depth (MD)	Depth (TVD)	Weight (lb/ft)	Grade	Top of Cement
Conductor	36	30	120'	120'	8W	BW	Surface
Surface	17.5	13 3/8	515'	515'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	2,243'	2,225'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	20,565'	6,425'	20	CYHP110	Surface

CEMENT SUMMARY				DRILLING DETAILS	
	Sacks	Class	Density	Fluid Type	Centralizer Notes
Conductor	338	A	15.6	Air	None
Surface	687	A	15.6	Air	3 Centralizers at equal distance
Intermediate 1	762	A	15	Air	1 Centralizer every other jt
Production	4,819	A	14.5	Air / SOBM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



Barry Hodge 1-21-21

4705102368

Pilot Hole
PH TD @
6,298' TVD

Landing Point @ 6,631' MD / 6,183' TVD
PH TVD = 100' below Onondaga Top

Lateral TD @ 20,565' ft MD
6,425' ft TVD

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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 Adam Picard 724-485-9331, apicard@dpslandservices.com, DPS GIS (12/04/2020) 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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03/12/2021

4705102368

Permit well - Van Winkle S-14HM

Wells within 500' Buffer

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

API Number	Operator Name	Total Depth	Perforated Fms	Producing zones not perforated	Is this well "known or reasonably expected to penetrate a depth that could be within the range of Fracture propagation"? 1000' is max limit I would assign to wells that might be within in range of fracture propagation	Comments
4705101330	Tug Hill Operating	10154' MD, 6151' TVD	Marcellus	Unknown	Yes, existing Marcellus producer. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Producing Marcellus horizontal well. Tug Hill Operating is considering plugging this well.
4705101284	Tug Hill Operating	6340' TVD	None	None	Yes, existing vertical pilot drilled into Onondaga. Well was not perforated. Proper casing and cement should prevent migration of fluids from new wellbore to existing wellbore.	Well is not producing.
4705101859	EQT Production Company	No Depth/Not Drilled	None	None	No, well is a proposed well. The well was not drilled. This is a canceled permit.	A canceled permit.
4705101860	EQT Production Company	No Depth/Not Drilled	None	None	No, well is a proposed well. The well was not drilled. This is a canceled permit.	A canceled permit.
4705101866	EQT Production Company	No Depth/Not Drilled	None	None	No, well is a proposed well. The well was not drilled. This is a canceled permit.	A canceled permit.
4705101846	EQT Production Company	No Depth/Not Drilled	None	None	No, well is a proposed well. The well was not drilled. This is a canceled permit.	A canceled permit.
4705101847	EQT Production Company	No Depth/Not Drilled	None	None	No, well is a proposed well. The well was not drilled. This is a canceled permit.	A canceled permit.
4705130115	Hope Natural Gas Company	2329' TVD	Gordon	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation. Well is plugged.	Well was plugged 12/18/1939.

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Location Information: View Map

Table with columns: APT, COUNTY, PERMIT, TAX_DISTRICT, QUAD, QUAD_15, LAY_DD, LON_DD, UTIME, UTMN. Row 1: 4705101284, Marshall, 1284, Moxide, Glen Easton, Cameron, 39.781904, -80.727876, 523302.4, 4403519.9

There is no Bottom Hole Location data for this well

Owner Information:

Table with columns: APT, CMP_DT, SUFFIX, STATUS, SURFACE_OWNER, WELL_NUM, CO_NUM, LEASE, LEASE_NUM, MINERAL_OWN, OPERATOR_AT_COMPLETION, PROP_VID, PROP_TRNG_FM, TFM_EST_PR. Row 1: 4705101284, 11/25/2009, Original Loc, Completed, Dennis W Hunter, 1, Hunter, Dennis W Hunter, Stone Energy Corporation, 6235, Marcellus Fm.

Completion Information:

Table with columns: APT, CMP_DT, SPUD_DT, ELEV DATUM, FIELD, DEEPEST_FM, DEEPEST_FMT, INITIAL_CLASS, FINAL_CLASS, TYPE, RIG, CMP_MTHD, TVD, TMD, NWD_FTG, KOD, G_BEF, G_AFT, O_BEF, O_AFT, NGL_BEF, NGL_AFT, P_BEF, P_AFT, TI_AFT, BH_P_BEF, BH_P_AFT, G_MSRD_BY. Row 1: 4705101284, 11/25/2009, 8/25/2009, Ground Level, Cameron-Garner, Onondaga Ls, Marcellus Fm, Development Well, Development Well, Gas, Rotary, Fractured, 6340, 6340, 220, 260, 1819, 480.

Pay/Show/Water Information:

Table with columns: APT, CMP_DT, ACTIVITY, PRODUCT, SECTION, DEPTH_TOP, FM_TOP, DEPTH_BOT, FM_BOT, G_BEF, G_AFT, O_BEF, O_AFT, WATER_QNTY. Rows include Stone Energy Corporation and EOT Production Company for various products like Water, Gas, and Oil.

Production Gas Information: (Volumes In Mcf)

Table with columns: APT, PRODUCING_OPERATOR, PRD_YEAR, ANN_GAS, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM. Rows for Stone Energy Corporation and EOT Production Company from 2011 to 2019.

Production Oil Information: (Volumes In Bbl) ** some operators may have reported NGL under Oil

Table with columns: APT, PRODUCING_OPERATOR, PRD_YEAR, ANN_OIL, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM. Rows for Stone Energy Corporation and EOT Production Company from 2011 to 2019.

Production NGL Information: (Volumes In Bbl) ** some operators may have reported NGL under Oil

Table with columns: APT, PRODUCING_OPERATOR, PRD_YEAR, ANN_NGL, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM. Rows for Stone Energy Corporation and EOT Production Company from 2011 to 2019.

Production Water Information: (Volumes In Gallons)

Table with columns: APT, PRODUCING_OPERATOR, PRD_YEAR, ANN_WTR, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM. Rows for EOT Production Company from 2016 to 2019.

Stratigraphy Information:

Table with columns: APT, SUFFIX, FM, FM_QUALITY, DEPTH_TOP, DEPTH_QUALITY, THICKNESS, THICKNESS_QUALITY, ELEV DATUM. Lists various geological layers like Pittsburgh coal, Little Lime, Onondaga Group, etc., with their depths and thicknesses.

Wireline (E-Log) Information:

Table with columns: APT, LOG_TOP, LOG_BOT, DEEPEST_FML, LOGS_AVAIL, SCAN, DIGITIZED, GR_TOP, GR_BOT, D_TOP, D_BOT, N_TOP, N_BOT, L_TOP, L_BOT, T_TOP, T_BOT, S_TOP, S_BOT, O_TOP, O_BOT, INCH2, INCH5, REDUCED, KOP, LOGMD, ELEV_KB, ELEV_GL, ELEV_DF, LOG_MSRD_FROM. Row 1: 4705101284, 5860, 5860, N, 100, 6380, 2011, 6355, 2011, 6360, 2037, 6360, 2011, 6367, Y, Y, H.

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

Table with column: FILENAME. Row 1: 4705101284boon.tif

- geologic log types:
d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)
e photoelectric absorption (PE or Pe, etc.)
g gamma ray
i induction (includes dual induction, medium induction, deep induction, etc.)
l lusterlog
m dipmeter
n neutron (includes neutron porosity, sidewall neutron-SWN, etc.)
o other
s sonic or velocity
t temperature (includes borehole temperature, BHT, differential temperature, etc.)
z spontaneous potential or potential
mechanical log types:
b cement bond
c caliper
e other
p perforation depth control or perforators

Other logs may include, but are not limited to, such curves as audio, bit size, CCL-casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL-Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

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Location Information: View Map

Table with columns: API, COUNTY, PERMIT, TAX_DISTRICT, QUAD, QUAD_16, LAT_DD, LON_DD, UTM_E, UTM_N. Row 1: 4705101330, Marshall, 1330, Meade, Glen Easton, Cameron, 39.781578, -80.726931, 523383.2, 4403550.6

Bottom Hole Location Information:

Table with columns: API, SP_FLAG, UTM_E, UTM_N, LON_DD, LAT_DD. Row 1: 4705101330, 1, As Proposed, 523188.9, 4402272.8, -80.729502, 39.770071

Owner Information:

Table with columns: API, CMP_DT, SUFFX, STATUS, SURFACE_OWNER, WELL_NUM, CO_NUM, LEASE, LEASE_NUM, MINERAL_OWN, OPERATOR_AT_COMPLETION, PROP_VD, PROP_TRGT_FM, TFM_EST_PR. Row 1: 4705101330, 8/19/2010, Dvld Crnt Loc, Completed, Dennis W Hunter, 1H, Hunter-Petrel, Dennis W Hunter, Stone Energy Corporation, 6220, Marcellus Fm

Completion Information:

Table with columns: API, CMP_DT, SPUO_DT, ELEV, DATUM, FIELD, DEEPEST_FML, DEEPEST_FMT, INITIAL_CLASS, FINAL_CLASS, TYPE, RIG, CMP_MTHD, TVD, TMD, NEW_FTC, KOD, G_BEF, G_AFT, O_BEF, O_AFT, NGL_BEF, NGL_AFT, P_BEF, TI_BEF, P_AFT, TI_AFT, BH_P_BEF, BH_P_AFT, G_MSRD_BY. Row 1: 4705101330, 8/19/2010, 2/28/2010, 755, Ground Level, Cameron-Garner, Onondaga Ls, Marcellus Fm, Development Well, Development Well, Gas, Rotary, Fractured, 6151, 10154, 10154, 257, 2089, 2200, 16

Pay/Show/Water Information:

Table with columns: API, CMP_DT, ACTIVITY, PRODUCT, SECTION, DEPTH_TOP, FM_TOP, DEPTH_BOT, FM_BOT, G_BEF, G_AFT, O_BEF, O_AFT, WATER_QNTY. Rows include Water, Salt Water, Gas production data for Marcellus Fm.

Production Gas Information: (Volumes in Mcf)

Table with columns: API, PRODUCING_OPERATOR, PRD_YEAR, ANN_GAS, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM. Rows show gas production volumes for various operators from 2011 to 2019.

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under oil

Table with columns: API, PRODUCING_OPERATOR, PRD_YEAR, ANN_OIL, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM. Rows show oil production volumes for various operators from 2011 to 2019.

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

Table with columns: API, PRODUCING_OPERATOR, PRD_YEAR, ANN_NGL, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM. Rows show NGL production volumes for various operators from 2011 to 2019.

Production Water Information: (Volumes in Gallons)

Table with columns: API, PRODUCING_OPERATOR, PRD_YEAR, ANN_WTR, JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DCM. Rows show water production volumes for various operators from 2016 to 2019.

Stratigraphy Information:

Table with columns: API, SUFFIX, Fm, FM_QUALITY, DEPTH_TOP, DEPTH_QUALITY, THICKNESS, THICKNESS_QUALITY, ELEV, DATUM. Lists stratigraphic units like Pittsburgh coal, Little Linn, Big Injun (Picecong), etc.

Wireline (E-Log) Information:

Table with columns: API, LOG_TOP, LOG_BOT, DEEPEST_FML, LOGS_AVAIL, SCAN, DIGITIZED, GR_TOP, GR_BOT, D_TOP, D_BOT, N_TOP, N_BOT, L_TOP, L_BOT, T_TOP, T_BOT, S_TOP, S_BOT, O_TOP, O_BOT, INCH2, INCH6, REDUCED, KOP, LOGMD, ELEV_KB, ELEV_GL, ELEV_DF, LOG_MSRD_FROM. Row 1: 4705101330, 4880, 6151, G, Y, N, 4880, 10668

Comment: *logs: ROP, tool temp

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

FILENAME: 4705101330_00_Sm_md_tvd.tgf, 4705101330_00_Sm_md_tvd.tif

- Quick Reference Guide for Log File Names For more info about WVGES scanned logs click here
geologic log types:
d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)
e photoelectric adsorption (PE or Pe, etc.)
g gamma ray
i induction (includes dual induction, medium induction, density induction, etc.)
l laterolog
m dipmeter
n neutron (includes neutron porosity, sidewall neutron-SWN, etc.)
o other
s sonic or velocity
t temperature (includes borehole temperature, BHT, differential temperature, etc.)
z spontaneous potential or potential
mechanical log types:
b cement bond
c caliper
o other
p perforation depth control or perforate

Other logs may include, but are not limited to, such curves as audio, bit size, CCL-casing collar locator, continuous meter, directional survey, gas detector, guard, NCTL-Nuclear Cement Top Locator, radioactive tracer, tension

There is no Plugging data for this well

There is no Sample data for this well

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101546	Marshall	1846	Meade	Glen Easton	Cameron	39.781827	-80.726602	523411.3	4403578.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101546	1	As Proposed	521973.8	4404978.5	-80.743342

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101846	-/-		Cancelled	Dennis W Hunter	9H		Hunter Pethtel		Dennis W Hunter et al	Stone Energy Corporation	6140	Marcellus Fm	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT	TI_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705101846	-/-	-/-		755	Ground Level																								

There is no Pay data for this well

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101846	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101846	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) *** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101846	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101846	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101847	Marshall	1847	Meade	Glen Easton	Cameron	39.781755	-80.72647	523422.6	4403570.4

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101847	1	As Proposed	523970	4401941.7	-80.720137

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101847	-/-		Cancelled	Dennis W Hunter	4H		Hunter Pethel		Dennis W Hunter et al	Stone Energy Corporation	6250	Marcellus Fm	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	TI_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705101847	-/-	-/-	755	Ground Level																								

There is no Pay data for this well

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101847	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101847	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101847	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101847	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

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Well: County = 51 Permit = 01859

WV Geological & Economic Survey:

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LON_DD	UTME	UTMN
4705101859	Marshall	1859	Meade	Glen Easton	Cameron	39.78156	-80.726875	523388	4403548.6

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101859	1	As Proposed	521903.3	4404881.6	-80.744175

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101859	---	---	Cancelled	Dennis W Hunter	8H		Hunter Pethtel		Dennis W Hunter et al	Stone Energy Corporation	6140	Marcellus Fm	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT	TI_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705101859	---	---	755	Ground Level																									

Comment: --- Plat coordinates hard to read, blurry Per WVDEP OOG website, well was cancelled 12/11/2017. No cancellation documents available.

There is no Pay data for this well

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101859	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101859	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101859	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101859	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LON_DD	UTME	UTMN
4705101860	Marshall	1860	Meade	Glen Easton	Cameron	39.781673	-80.726548	523416	4403561.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101860	1	As Proposed	522074.3	4405230.4	-80.74216

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101860	--	Dvd Orig Loc	Cancelled	Dennis W Hunter	10H		Hunter Pethel		Dennis W Hunter et al	Stone Energy Corporation		6140	Marcellus Fm

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT	TI_AFT	BH_P_BEF	BH_P_AFT	G_MSRO_BY
4705101860	--	--	755	Ground Level																									

Comment: -- Per WVDEP OOG website, well was cancelled 12/11/2017. No cancellation documents available.

There is no Pay data for this well

Production Gas Information: (Volumes In Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101860	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes In Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101860	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes In Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101860	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes In Gallons)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101860	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

4705102368

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_15	LAT_DD	LON_DD	UTME	UTMN
4705101866	Marshall	1866	Meade	Glen Easton	Cameron	39.781782	-80.726409	523427.8	4403573.4

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LON_DD	LAT_DD
4705101866	1 As Proposed	524237.2	4402287.1	-80.717005	39.77017

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705101866	--	Divd Origl Loc	Cancelled	Dennis W Hunter	5H		Hunter/Petitel		Dennis W Hunter et al	Stone Energy Corporation	6250	Marcellus Fm	4200

Completion Information:

API	CMP_DT	SPUD_DT	ELEV_DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTG	KOD	G_BEFO	G_AFTO	O_BEFO	O_AFTO	NGL_BEFO	NGL_AFTO	P_BEFO	TI_BEFO	P_AFTO	TI_AFTO	BH_PO	BH_AFTO	G_MSRD_BY
4705101866	--	--	755 Ground Level																									

Comment: -- Per WVDEP OOG website, well was cancelled 12/11/2017. No cancellation documents available.

There is no Pay data for this well

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101866	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Oil Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101866	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) ** some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101866	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101866	EQT Production Company	2018	0	0	0	0	0	0	0	0	0	0	0	0	0

There is no Stratigraphy data for this well

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

There is no Plugging data for this well

There is no Sample data for this well

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LON_DD	UTME	UTMN
4705130115	Marshall	30115	Meade	Glen Easton	Cameron	39.763954	-80.708374	524878 6	4401599 6

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_PR
4705130115	5/13/1902	Original Loc	Completed	Harley Kemp	1	49	Peter Kemp	2006	unknown	Hope Natural Gas Company			

Completion Information:

API	CMP_DT	SPUD_DT	ELEV	DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TYD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TI_BEF	P_AFT	TI_AFT	BH_P_BEF	BH_P_AFT	G_MSRO_BY
4705130115	5/13/1902	3/28/1902	696	Ground Level	Cameron-Garner	Gordon	Gordon	Development Well	unclassified	Gas	Cable Tool Shot		2329		2329		0	0	0	0	0	0	0	0	0	0	0	0	0

Pay/Show Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705130115	5/13/1902	Pay	Gas	Vertical	2315	Gordon	2325	Gordon	0	0			

There is no Production Gas data for this well

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

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

There is no Production Water data for this well

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV	DATUM
4705130115	Original Loc	Sewickley coal	Well Record	90	Reasonable	5	Reasonable	696	Ground Level
4705130115	Original Loc	Pittsburgh coal	Well Record	313	Reasonable	10	Reasonable	696	Ground Level
4705130115	Original Loc	Salt Sands (undiff)	Well Record	1015	Reasonable	185	Reasonable	696	Ground Level
4705130115	Original Loc	Big Lime	Well Record	1310	Reasonable	40	Reasonable	696	Ground Level
4705130115	Original Loc	Big Injun (undiff)	Well Record	1350	Reasonable	306	Reasonable	696	Ground Level
4705130115	Original Loc	Gordon Stray	Well Record	2276	Reasonable	5	Reasonable	696	Ground Level
4705130115	Original Loc	Gordon	Well Record	2316	Reasonable	13	Reasonable	696	Ground Level

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

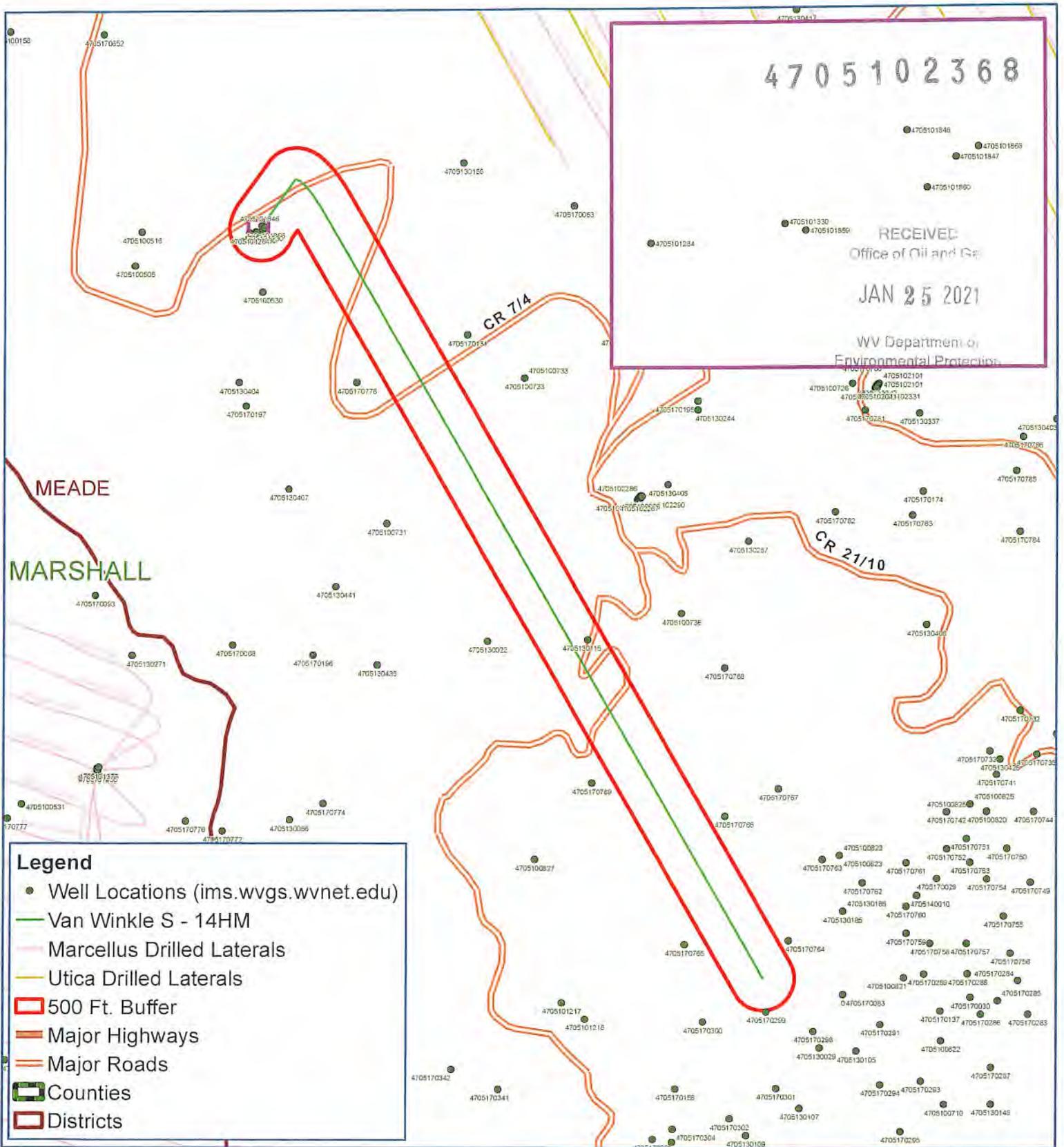
Plugging Information:

API	PLG_DT	DEPTH_PBT
4705130115	12/18/1939	0

There is no Sample data for this well

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Van Winkle S - 14HM Meade District Marshall County, WV



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

Map Prepared by:
DPS
LAND SERVICES
03/12/2021

Map Created: December 2, 2020
Map Current As Of: December 11, 2020

4705102368



Well: Van Winkle S-14 HM (slot O)
Site: Van Winkle
Project: Marshall County, West Virginia
Design: rev1
Rig:

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Annotation
1	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.000	0.00	
2	1100.00	0.00	0.000	1100.00	0.00	0.00	0.00	0.000	0.00	KOP Begin 2°/100' build
3	1700.00	12.00	20.000	1695.62	58.83	21.41	2.00	20.000	-36.84	Begin 2°/100' build/turn
4	1875.78	12.86	35.889	1867.33	91.86	39.14	2.00	83.686	-54.34	Begin 12.86° tangent
5	5552.88	12.86	35.889	5452.15	755.06	519.02	0.00	0.000	-336.48	Begin 8°/100' build/turn
6	6230.57	50.00	140.120	6045.23	605.66	746.94	8.00	113.748	-85.27	Begin 10°/100' build/turn
7	6630.85	89.00	150.001	6183.00	302.26	953.78	10.00	15.472	281.92	Begin 89.00° lateral
8	20565.40	89.00	150.001	6425.00	-11763.69	7919.81	0.00	0.000	4181.25	PBHL/TD 20565.40 MD/6425.00 TVD

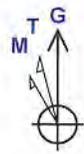
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Van Winkle S-14HM LP r1 - plan misses target center by 0.06ft at 6630.84ft MD (6183.00 TVD, 302.28 N, 953.77 E)	6183.00	302.25	953.7214447568.43	1718172.58	39.78253800	-80.72322700	
Van Winkle S-14HM PBHL r1 - plan hits target center	6425.00	-11763.69	7919.8114435602.52	1725138.66	39.74934000	-80.69857600	

Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD83 West Virginia - HARN
 Ellipsoid: GRS 1980
 Zone: Zone 17N (84 W to 78 W)

System Datum: Mean Sea Level
 Depth Reference: GL @ 754.00ft

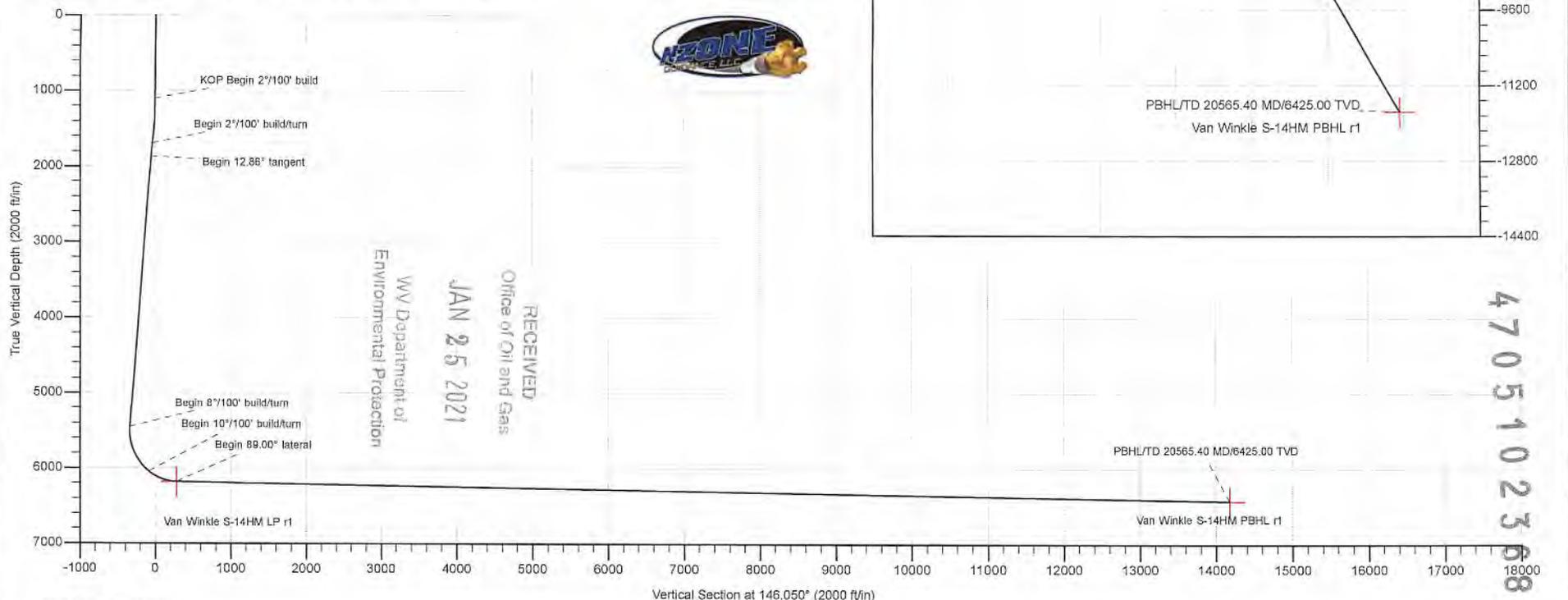
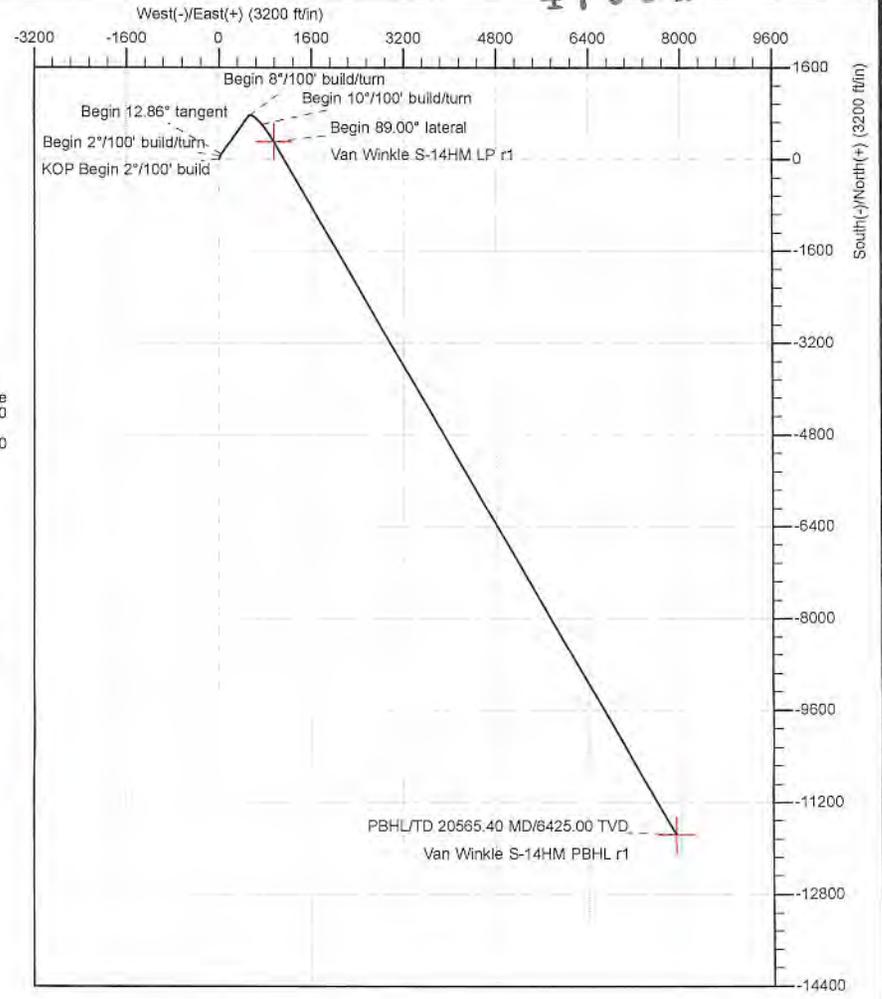
Northing	Easting	Latitude	Longitude
14447366.19	1717218.87	39.78171600	-80.72662500



Azimuths to Grid North
 True North: -0.17°
 Magnetic North: -8.82°

Magnetic Field
 Strength: 51812.23nT
 Dip Angle: 66.60°
 Date: 11/13/2020
 Model: IGRF2020

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.82°



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Planning Report - Geographic



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-14 HM (slot O)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 754.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 754.00ft
Site:	Van Winkle	North Reference:	Grid
Well:	Van Winkle S-14 HM (slot O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

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

Site	Van Winkle				
Site Position:		Northing:	14,447,369.50 usft	Latitude:	39.78172533
From:	Lat/Long	Easting:	1,717,188.44 usft	Longitude:	-80.72673327
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.175 "

Well	Van Winkle S-14 HM (slot O)					
Well Position	+N/-S	0.00 ft	Northing:	14,447,366.19 usft	Latitude:	39.78171600
	+E/-W	0.00 ft	Easting:	1,717,218.87 usft	Longitude:	-80.72662500
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	754.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	11/13/2020	-8.646	66.595	51,812.21163548

Design	rev1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	146.050

Plan Survey Tool Program	Date	11/17/2020		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,565.40 rev1 (Original Hole)	MWD MWD - Standard	

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Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,100.00	0.00	0.000	1,100.00	0.00	0.00	0.00	0.00	0.00	0.000	
1,700.00	12.00	20.000	1,695.62	58.83	21.41	2.00	2.00	0.00	20.000	
1,875.78	12.86	35.889	1,867.33	91.86	39.14	2.00	0.49	9.04	83.686	
5,552.88	12.86	35.889	5,452.15	755.06	519.02	0.00	0.00	0.00	0.000	
6,230.57	50.00	140.120	6,045.23	605.66	746.94	8.00	5.48	15.38	113.748	
6,630.85	89.00	150.001	6,183.00	302.26	953.78	10.00	9.74	2.47	15.472	
20,565.40	89.00	150.001	6,425.00	-11,763.69	7,919.81	0.00	0.00	0.00	0.000	Van Winkle S-14HM F

WV Department of Environmental Protection



Planning Report - Geographic



Database: DB_Aug1919_v14	Local Co-ordinate Reference: Well Van Winkle S-14 HM (slot O)	RECEIVED
Company: Tug Hill Operating LLC	TVD Reference: GL @ 754.00ft	Office of Oil and Gas
Project: Marshall County, West Virginia	MD Reference: GL @ 754.00ft	JAN 25 2021
Site: Van Winkle	North Reference: Grid	
Well: Van Winkle S-14 HM (slot O)	Survey Calculation Method: Minimum Curvature	WV Department of Environmental Protection
Wellbore: Original Hole		
Design: rev1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.000	0.00	0.00	0.00	14,447,366.19	1,717,218.87	39.78171600	-80.72662500	
100.00	0.00	0.000	100.00	0.00	0.00	14,447,366.19	1,717,218.87	39.78171600	-80.72662500	
200.00	0.00	0.000	200.00	0.00	0.00	14,447,366.19	1,717,218.87	39.78171600	-80.72662500	
300.00	0.00	0.000	300.00	0.00	0.00	14,447,366.19	1,717,218.87	39.78171600	-80.72662500	
400.00	0.00	0.000	400.00	0.00	0.00	14,447,366.19	1,717,218.87	39.78171600	-80.72662500	
500.00	0.00	0.000	500.00	0.00	0.00	14,447,366.19	1,717,218.87	39.78171600	-80.72662500	
600.00	0.00	0.000	600.00	0.00	0.00	14,447,366.19	1,717,218.87	39.78171600	-80.72662500	
700.00	0.00	0.000	700.00	0.00	0.00	14,447,366.19	1,717,218.87	39.78171600	-80.72662500	
800.00	0.00	0.000	800.00	0.00	0.00	14,447,366.19	1,717,218.87	39.78171600	-80.72662500	
900.00	0.00	0.000	900.00	0.00	0.00	14,447,366.19	1,717,218.87	39.78171600	-80.72662500	
1,000.00	0.00	0.000	1,000.00	0.00	0.00	14,447,366.19	1,717,218.87	39.78171600	-80.72662500	
1,100.00	0.00	0.000	1,100.00	0.00	0.00	14,447,366.19	1,717,218.87	39.78171600	-80.72662500	
KOP Begin 2°/100' build										
1,200.00	2.00	20.000	1,199.98	1.64	0.60	14,447,367.83	1,717,219.46	39.78172050	-80.72662286	
1,300.00	4.00	20.000	1,299.84	6.56	2.39	14,447,372.75	1,717,221.25	39.78173399	-80.72661643	
1,400.00	6.00	20.000	1,399.45	14.75	5.37	14,447,380.94	1,717,224.23	39.78175646	-80.72660574	
1,500.00	8.00	20.000	1,498.70	26.20	9.54	14,447,392.39	1,717,228.40	39.78178787	-80.72659078	
1,600.00	10.00	20.000	1,597.47	40.90	14.89	14,447,407.09	1,717,233.75	39.78182819	-80.72657157	
1,700.00	12.00	20.000	1,695.62	58.83	21.41	14,447,425.02	1,717,240.28	39.78187738	-80.72654815	
Begin 2°/100' build/tum										
1,800.00	12.38	29.312	1,793.38	77.94	30.22	14,447,444.14	1,717,249.08	39.78192980	-80.72651661	
1,875.78	12.86	35.889	1,867.33	91.86	39.14	14,447,458.05	1,717,258.00	39.78196795	-80.72648470	
Begin 12.86° tangent										
1,900.00	12.86	35.889	1,890.94	96.23	42.30	14,447,462.42	1,717,261.16	39.78197992	-80.72647340	
2,000.00	12.86	35.889	1,988.43	114.26	55.35	14,447,480.46	1,717,274.21	39.78202934	-80.72642675	
2,100.00	12.86	35.889	2,085.92	132.30	68.40	14,447,498.49	1,717,287.26	39.78207876	-80.72638010	
2,200.00	12.86	35.889	2,183.41	150.34	81.45	14,447,516.53	1,717,300.31	39.78212818	-80.72633345	
2,300.00	12.86	35.889	2,280.90	168.37	94.50	14,447,534.56	1,717,313.37	39.78217760	-80.72628680	
2,400.00	12.86	35.889	2,378.40	186.41	107.55	14,447,552.60	1,717,326.42	39.78222702	-80.72624015	
2,500.00	12.86	35.889	2,475.89	204.44	120.60	14,447,570.64	1,717,339.47	39.78227645	-80.72619351	
2,600.00	12.86	35.889	2,573.38	222.48	133.65	14,447,588.67	1,717,352.52	39.78232587	-80.72614686	
2,700.00	12.86	35.889	2,670.87	240.52	146.70	14,447,606.71	1,717,365.57	39.78237529	-80.72610021	
2,800.00	12.86	35.889	2,768.36	258.55	159.75	14,447,624.74	1,717,378.62	39.78242471	-80.72605356	
2,900.00	12.86	35.889	2,865.85	276.59	172.80	14,447,642.78	1,717,391.67	39.78247413	-80.72600691	
3,000.00	12.86	35.889	2,963.34	294.62	185.85	14,447,660.81	1,717,404.72	39.78252355	-80.72596026	
3,100.00	12.86	35.889	3,060.83	312.66	198.90	14,447,678.85	1,717,417.77	39.78257298	-80.72591361	
3,200.00	12.86	35.889	3,158.32	330.70	211.96	14,447,696.89	1,717,430.82	39.78262240	-80.72586696	
3,300.00	12.86	35.889	3,255.81	348.73	225.01	14,447,714.92	1,717,443.87	39.78267182	-80.72582031	
3,400.00	12.86	35.889	3,353.30	366.77	238.06	14,447,732.96	1,717,456.92	39.78272124	-80.72577366	
3,500.00	12.86	35.889	3,450.79	384.80	251.11	14,447,750.99	1,717,469.97	39.78277066	-80.72572701	
3,600.00	12.86	35.889	3,548.28	402.84	264.16	14,447,769.03	1,717,483.02	39.78282008	-80.72568036	
3,700.00	12.86	35.889	3,645.77	420.87	277.21	14,447,787.07	1,717,496.07	39.78286950	-80.72563371	
3,800.00	12.86	35.889	3,743.26	438.91	290.26	14,447,805.10	1,717,509.12	39.78291893	-80.72558706	
3,900.00	12.86	35.889	3,840.75	456.95	303.31	14,447,823.14	1,717,522.17	39.78296835	-80.72554041	
4,000.00	12.86	35.889	3,938.24	474.98	316.36	14,447,841.17	1,717,535.22	39.78301777	-80.72549376	
4,100.00	12.86	35.889	4,035.73	493.02	329.41	14,447,859.21	1,717,548.28	39.78306719	-80.72544711	
4,200.00	12.86	35.889	4,133.22	511.05	342.46	14,447,877.24	1,717,561.33	39.78311661	-80.72540046	
4,300.00	12.86	35.889	4,230.71	529.09	355.51	14,447,895.28	1,717,574.38	39.78316603	-80.72535381	
4,400.00	12.86	35.889	4,328.20	547.13	368.56	14,447,913.32	1,717,587.43	39.78321545	-80.72530716	
4,500.00	12.86	35.889	4,425.70	565.16	381.61	14,447,931.35	1,717,600.48	39.78326487	-80.72526051	
4,600.00	12.86	35.889	4,523.19	583.20	394.66	14,447,949.39	1,717,613.53	39.78331430	-80.72521386	
4,700.00	12.86	35.889	4,620.68	601.23	407.71	14,447,967.42	1,717,626.58	39.78336372	-80.72516721	
4,800.00	12.86	35.889	4,718.17	619.27	420.76	14,447,985.46	1,717,639.63	39.78341314	-80.72512056	
4,900.00	12.86	35.889	4,815.66	637.30	433.81	14,448,003.50	1,717,652.68	39.78346256	-80.72507391	



Database: DB_Aug1919_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Van Winkle
 Well: Van Winkle S-14 HM (slot O)
 Wellbore: Original Hole
 Design: rev1

Local Co-ordinate Reference: Well Van Winkle S-14 HM (slot O)
 TVD Reference: GL @ 754.00ft
 MD Reference: GL @ 754.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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 Office of Oil and Gas
 JAN 25 2021
 WV Department of
 Environmental Protection

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,000.00	12.86	35.889	4,913.15	655.34	446.87	14,448,021.53	1,717,665.73	39.78351198	-80.72502725	
5,100.00	12.86	35.889	5,010.64	673.38	459.92	14,448,039.57	1,717,678.78	39.78356140	-80.72498060	
5,200.00	12.86	35.889	5,108.13	691.41	472.97	14,448,057.60	1,717,691.83	39.78361082	-80.72493395	
5,300.00	12.86	35.889	5,205.62	709.45	486.02	14,448,075.64	1,717,704.88	39.78366024	-80.72488730	
5,400.00	12.86	35.889	5,303.11	727.48	499.07	14,448,093.67	1,717,717.93	39.78370966	-80.72484065	
5,500.00	12.86	35.889	5,400.60	745.52	512.12	14,448,111.71	1,717,730.98	39.78375909	-80.72479400	
5,552.88	12.86	35.889	5,452.15	755.06	519.02	14,448,121.25	1,717,737.88	39.78378522	-80.72476933	
Begin 8°/100' build/turn										
5,600.00	11.85	52.932	5,498.20	762.23	525.96	14,448,128.42	1,717,744.82	39.78380485	-80.72474456	
5,700.00	13.42	89.449	5,595.92	768.54	545.79	14,448,134.73	1,717,764.65	39.78382201	-80.72467391	
5,800.00	18.60	111.974	5,692.10	762.67	572.22	14,448,128.86	1,717,791.09	39.78380568	-80.72457987	
5,900.00	25.26	124.001	5,784.86	744.74	604.75	14,448,110.93	1,717,823.62	39.78375617	-80.72446428	
6,000.00	32.50	131.107	5,872.39	715.10	642.74	14,448,081.29	1,717,861.61	39.78367445	-80.72432937	
6,100.00	40.00	135.817	5,953.00	674.33	685.45	14,448,040.52	1,717,904.32	39.78356210	-80.72417779	
6,200.00	47.65	139.240	6,025.10	623.21	732.05	14,447,989.40	1,717,950.92	39.78342132	-80.72401248	
6,230.57	50.00	140.120	6,045.23	605.66	746.94	14,447,971.85	1,717,965.80	39.78337301	-80.72395968	
Begin 10°/100' build/turn										
6,300.00	56.71	142.331	6,086.65	562.23	781.77	14,447,928.42	1,718,000.63	39.78325345	-80.72383620	
6,400.00	66.44	144.985	6,134.20	491.43	833.74	14,447,857.62	1,718,052.60	39.78305857	-80.72365198	
6,500.00	76.20	147.270	6,166.19	412.85	886.42	14,447,779.04	1,718,105.29	39.78284232	-80.72346531	
6,600.00	85.98	149.369	6,181.65	328.87	938.22	14,447,695.06	1,718,157.08	39.78261125	-80.72328186	
6,630.85	89.00	150.001	6,183.00	302.26	953.78	14,447,668.46	1,718,172.64	39.78253805	-80.72322678	
Begin 89.00° lateral										
6,700.00	89.00	150.001	6,184.20	242.39	988.34	14,447,608.58	1,718,207.21	39.78237333	-80.72310440	
6,800.00	89.00	150.001	6,185.94	155.80	1,038.34	14,447,521.99	1,718,257.20	39.78213510	-80.72292741	
6,900.00	89.00	150.001	6,187.68	69.21	1,088.33	14,447,435.40	1,718,307.19	39.78189688	-80.72275042	
7,000.00	89.00	150.001	6,189.41	-17.38	1,138.32	14,447,348.81	1,718,357.18	39.78165866	-80.72257344	
7,100.00	89.00	150.001	6,191.15	-103.97	1,188.31	14,447,262.22	1,718,407.17	39.78142043	-80.72239646	
7,200.00	89.00	150.001	6,192.89	-190.56	1,238.30	14,447,175.63	1,718,457.16	39.78118221	-80.72221947	
7,300.00	89.00	150.001	6,194.62	-277.15	1,288.29	14,447,089.04	1,718,507.15	39.78094398	-80.72204249	
7,400.00	89.00	150.001	6,196.36	-363.74	1,338.28	14,447,002.45	1,718,557.14	39.78070575	-80.72186551	
7,500.00	89.00	150.001	6,198.10	-450.33	1,388.27	14,446,915.86	1,718,607.14	39.78046753	-80.72168853	
7,600.00	89.00	150.001	6,199.83	-536.92	1,438.26	14,446,829.27	1,718,657.13	39.78022930	-80.72151156	
7,700.00	89.00	150.001	6,201.57	-623.51	1,488.26	14,446,742.68	1,718,707.12	39.77999108	-80.72133458	
7,800.00	89.00	150.001	6,203.31	-710.10	1,538.25	14,446,656.09	1,718,757.11	39.77975285	-80.72115760	
7,900.00	89.00	150.001	6,205.04	-796.69	1,588.24	14,446,569.50	1,718,807.10	39.77951462	-80.72098063	
8,000.00	89.00	150.001	6,206.78	-883.28	1,638.23	14,446,482.91	1,718,857.09	39.77927640	-80.72080366	
8,100.00	89.00	150.001	6,208.52	-969.87	1,688.22	14,446,396.32	1,718,907.08	39.77903817	-80.72062669	
8,200.00	89.00	150.001	6,210.25	-1,056.46	1,738.21	14,446,309.73	1,718,957.07	39.77879994	-80.72044971	
8,300.00	89.00	150.001	6,211.99	-1,143.05	1,788.20	14,446,223.14	1,719,007.06	39.77856171	-80.72027275	
8,400.00	89.00	150.001	6,213.73	-1,229.64	1,838.19	14,446,136.55	1,719,057.05	39.77832348	-80.72009578	
8,500.00	89.00	150.001	6,215.46	-1,316.23	1,888.18	14,446,049.96	1,719,107.05	39.77808525	-80.71991881	
8,600.00	89.00	150.001	6,217.20	-1,402.82	1,938.18	14,445,963.37	1,719,157.04	39.77784703	-80.71974185	
8,700.00	89.00	150.001	6,218.94	-1,489.41	1,988.17	14,445,876.78	1,719,207.03	39.77760880	-80.71956488	
8,800.00	89.00	150.001	6,220.67	-1,576.01	2,038.16	14,445,790.19	1,719,257.02	39.77737057	-80.71938792	
8,900.00	89.00	150.001	6,222.41	-1,662.60	2,088.15	14,445,703.60	1,719,307.01	39.77713234	-80.71921096	
9,000.00	89.00	150.001	6,224.15	-1,749.19	2,138.14	14,445,617.01	1,719,357.00	39.77689411	-80.71903400	
9,100.00	89.00	150.001	6,225.88	-1,835.78	2,188.13	14,445,530.42	1,719,406.99	39.77665588	-80.71885704	
9,200.00	89.00	150.001	6,227.62	-1,922.37	2,238.12	14,445,443.83	1,719,456.98	39.77641765	-80.71868008	
9,300.00	89.00	150.001	6,229.36	-2,008.96	2,288.11	14,445,357.24	1,719,506.97	39.77617942	-80.71850312	
9,400.00	89.00	150.001	6,231.09	-2,095.55	2,338.10	14,445,270.65	1,719,556.96	39.77594118	-80.71832617	
9,500.00	89.00	150.001	6,232.83	-2,182.14	2,388.10	14,445,184.06	1,719,606.96	39.77570295	-80.71814921	
9,600.00	89.00	150.001	6,234.57	-2,268.73	2,438.09	14,445,097.47	1,719,656.95	39.77546472	-80.71797226	
9,700.00	89.00	150.001	6,236.30	-2,355.32	2,488.08	14,445,010.88	1,719,706.94	39.77522649	-80.71779531	



Database: DB_Aug1919_v14
Company: Tug Hill Operating LLC
Project: Marshall County, West Virginia
Site: Van Winkle
Well: Van Winkle S-14 HM (slot O)
Wellbore: Original Hole
Design: rev1

Local Co-ordinate Reference: Well Van Winkle S-14 HM (slot O)
TVD Reference: GL @ 754.00ft
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North Reference: Grid
Survey Calculation Method: Minimum Curvature

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Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,800.00	89.00	150.001	6,238.04	-2,441.91	2,538.07	14,444,924.29	1,719,756.93	39.77498826	-80.71761835
9,900.00	89.00	150.001	6,239.78	-2,528.50	2,588.06	14,444,837.70	1,719,806.92	39.77475002	-80.71744140
10,000.00	89.00	150.001	6,241.51	-2,615.09	2,638.05	14,444,751.11	1,719,856.91	39.77451179	-80.71726446
10,100.00	89.00	150.001	6,243.25	-2,701.68	2,688.04	14,444,664.52	1,719,906.90	39.77427356	-80.71708751
10,200.00	89.00	150.001	6,244.99	-2,788.27	2,738.03	14,444,577.93	1,719,956.89	39.77403533	-80.71691056
10,300.00	89.00	150.001	6,246.72	-2,874.86	2,788.02	14,444,491.34	1,720,006.88	39.77379709	-80.71673362
10,400.00	89.00	150.001	6,248.46	-2,961.45	2,838.02	14,444,404.75	1,720,056.87	39.77355886	-80.71655667
10,500.00	89.00	150.001	6,250.20	-3,048.04	2,888.01	14,444,318.16	1,720,106.87	39.77332062	-80.71637973
10,600.00	89.00	150.001	6,251.93	-3,134.63	2,938.00	14,444,231.57	1,720,156.86	39.77308239	-80.71620279
10,700.00	89.00	150.001	6,253.67	-3,221.22	2,987.99	14,444,144.98	1,720,206.85	39.77284415	-80.71602585
10,800.00	89.00	150.001	6,255.41	-3,307.81	3,037.98	14,444,058.39	1,720,256.84	39.77260592	-80.71584891
10,900.00	89.00	150.001	6,257.14	-3,394.40	3,087.97	14,443,971.80	1,720,306.83	39.77236768	-80.71567197
11,000.00	89.00	150.001	6,258.88	-3,480.99	3,137.96	14,443,885.21	1,720,356.82	39.77212945	-80.71549504
11,100.00	89.00	150.001	6,260.62	-3,567.58	3,187.95	14,443,798.62	1,720,406.81	39.77189121	-80.71531810
11,200.00	89.00	150.001	6,262.35	-3,654.17	3,237.94	14,443,712.03	1,720,456.80	39.77165298	-80.71514117
11,300.00	89.00	150.001	6,264.09	-3,740.76	3,287.94	14,443,625.44	1,720,506.79	39.77141474	-80.71496424
11,400.00	89.00	150.001	6,265.83	-3,827.35	3,337.93	14,443,538.85	1,720,556.78	39.77117650	-80.71478731
11,500.00	89.00	150.001	6,267.56	-3,913.94	3,387.92	14,443,452.26	1,720,606.78	39.77093827	-80.71461038
11,600.00	89.00	150.001	6,269.30	-4,000.53	3,437.91	14,443,365.67	1,720,656.77	39.77070003	-80.71443345
11,700.00	89.00	150.001	6,271.04	-4,087.12	3,487.90	14,443,279.08	1,720,706.76	39.77046179	-80.71425652
11,800.00	89.00	150.001	6,272.77	-4,173.71	3,537.89	14,443,192.49	1,720,756.75	39.77022355	-80.71407959
11,900.00	89.00	150.001	6,274.51	-4,260.30	3,587.88	14,443,105.90	1,720,806.74	39.76998532	-80.71390267
12,000.00	89.00	150.001	6,276.25	-4,346.89	3,637.87	14,443,019.31	1,720,856.73	39.76974708	-80.71372574
12,100.00	89.00	150.001	6,277.98	-4,433.48	3,687.86	14,442,932.72	1,720,906.72	39.76950884	-80.71354882
12,200.00	89.00	150.001	6,279.72	-4,520.07	3,737.86	14,442,846.13	1,720,956.71	39.76927060	-80.71337190
12,300.00	89.00	150.001	6,281.46	-4,606.66	3,787.85	14,442,759.54	1,721,006.70	39.76903236	-80.71319498
12,400.00	89.00	150.001	6,283.19	-4,693.25	3,837.84	14,442,672.95	1,721,056.70	39.76879412	-80.71301806
12,500.00	89.00	150.001	6,284.93	-4,779.84	3,887.83	14,442,586.36	1,721,106.69	39.76855588	-80.71284114
12,600.00	89.00	150.001	6,286.67	-4,866.44	3,937.82	14,442,499.77	1,721,156.68	39.76831764	-80.71266422
12,700.00	89.00	150.001	6,288.40	-4,953.03	3,987.81	14,442,413.18	1,721,206.67	39.76807940	-80.71248731
12,800.00	89.00	150.001	6,290.14	-5,039.62	4,037.80	14,442,326.59	1,721,256.66	39.76784116	-80.71231039
12,900.00	89.00	150.001	6,291.88	-5,126.21	4,087.79	14,442,240.00	1,721,306.65	39.76760292	-80.71213348
13,000.00	89.00	150.001	6,293.61	-5,212.80	4,137.78	14,442,153.41	1,721,356.64	39.76736468	-80.71195657
13,100.00	89.00	150.001	6,295.35	-5,299.39	4,187.77	14,442,066.82	1,721,406.63	39.76712644	-80.71177966
13,200.00	89.00	150.001	6,297.09	-5,385.98	4,237.77	14,441,980.23	1,721,456.62	39.76688820	-80.71160275
13,300.00	89.00	150.001	6,298.82	-5,472.57	4,287.76	14,441,893.64	1,721,506.61	39.76664995	-80.71142584
13,400.00	89.00	150.001	6,300.56	-5,559.16	4,337.75	14,441,807.05	1,721,556.61	39.76641171	-80.71124893
13,500.00	89.00	150.001	6,302.30	-5,645.75	4,387.74	14,441,720.46	1,721,606.60	39.76617347	-80.71107203
13,600.00	89.00	150.001	6,304.03	-5,732.34	4,437.73	14,441,633.87	1,721,656.59	39.76593523	-80.71089512
13,700.00	89.00	150.001	6,305.77	-5,818.93	4,487.72	14,441,547.28	1,721,706.58	39.76569698	-80.71071822
13,800.00	89.00	150.001	6,307.51	-5,905.52	4,537.71	14,441,460.69	1,721,756.57	39.76545874	-80.71054132
13,900.00	89.00	150.001	6,309.24	-5,992.11	4,587.70	14,441,374.10	1,721,806.56	39.76522050	-80.71036442
14,000.00	89.00	150.001	6,310.98	-6,078.70	4,637.69	14,441,287.50	1,721,856.55	39.76498225	-80.71018752
14,100.00	89.00	150.001	6,312.72	-6,165.29	4,687.69	14,441,200.91	1,721,906.54	39.76474401	-80.71001062
14,200.00	89.00	150.001	6,314.45	-6,251.88	4,737.68	14,441,114.32	1,721,956.53	39.76450577	-80.70983372
14,300.00	89.00	150.001	6,316.19	-6,338.47	4,787.67	14,441,027.73	1,722,006.52	39.76426752	-80.70965682
14,400.00	89.00	150.001	6,317.93	-6,425.06	4,837.66	14,440,941.14	1,722,056.52	39.76402928	-80.70947993
14,500.00	89.00	150.001	6,319.66	-6,511.65	4,887.65	14,440,854.55	1,722,106.51	39.76379103	-80.70930303
14,600.00	89.00	150.001	6,321.40	-6,598.24	4,937.64	14,440,767.96	1,722,156.50	39.76355279	-80.70912614
14,700.00	89.00	150.001	6,323.14	-6,684.83	4,987.63	14,440,681.37	1,722,206.49	39.76331454	-80.70894925
14,800.00	89.00	150.001	6,324.87	-6,771.42	5,037.62	14,440,594.78	1,722,256.48	39.76307629	-80.70877236
14,900.00	89.00	150.001	6,326.61	-6,858.01	5,087.61	14,440,508.19	1,722,306.47	39.76283805	-80.70859547
15,000.00	89.00	150.001	6,328.35	-6,944.60	5,137.61	14,440,421.60	1,722,356.46	39.76259980	-80.70841858
15,100.00	89.00	150.001	6,330.08	-7,031.19	5,187.60	14,440,335.01	1,722,406.45	39.76236155	-80.70824170
15,200.00	89.00	150.001	6,331.82	-7,117.78	5,237.59	14,440,248.42	1,722,456.44	39.76212331	-80.70806481



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Planning Report - Geographic



Database: DB_Aug1919_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Van Winkle
 Well: Van Winkle S-14 HM (slot O)
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 Design: rev1

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Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,300.00	89.00	150.001	6,333.56	-7,204.37	5,287.58	14,440,161.83	1,722,506.43	39.76188506	-80.70788793
15,400.00	89.00	150.001	6,335.29	-7,290.96	5,337.57	14,440,075.24	1,722,556.43	39.76164681	-80.70771105
15,500.00	89.00	150.001	6,337.03	-7,377.55	5,387.56	14,439,988.65	1,722,606.42	39.76140856	-80.70753416
15,600.00	89.00	150.001	6,338.77	-7,464.14	5,437.55	14,439,902.06	1,722,656.41	39.76117032	-80.70735728
15,700.00	89.00	150.001	6,340.50	-7,550.73	5,487.54	14,439,815.47	1,722,706.40	39.76093207	-80.70718040
15,800.00	89.00	150.001	6,342.24	-7,637.32	5,537.53	14,439,728.88	1,722,756.39	39.76069382	-80.70700353
15,900.00	89.00	150.001	6,343.98	-7,723.91	5,587.53	14,439,642.29	1,722,806.38	39.76045557	-80.70682665
16,000.00	89.00	150.001	6,345.71	-7,810.50	5,637.52	14,439,555.70	1,722,856.37	39.76021732	-80.70664977
16,100.00	89.00	150.001	6,347.45	-7,897.09	5,687.51	14,439,469.11	1,722,906.36	39.75997907	-80.70647290
16,200.00	89.00	150.001	6,349.19	-7,983.68	5,737.50	14,439,382.52	1,722,956.35	39.75974082	-80.70629603
16,300.00	89.00	150.001	6,350.92	-8,070.27	5,787.49	14,439,295.93	1,723,006.34	39.75950257	-80.70611916
16,400.00	89.00	150.001	6,352.66	-8,156.87	5,837.48	14,439,209.34	1,723,056.34	39.75926432	-80.70594228
16,500.00	89.00	150.001	6,354.40	-8,243.46	5,887.47	14,439,122.75	1,723,106.33	39.75902607	-80.70576542
16,600.00	89.00	150.001	6,356.13	-8,330.05	5,937.46	14,439,036.16	1,723,156.32	39.75878782	-80.70558855
16,700.00	89.00	150.001	6,357.87	-8,416.64	5,987.45	14,438,949.57	1,723,206.31	39.75854957	-80.70541168
16,800.00	89.00	150.001	6,359.61	-8,503.23	6,037.45	14,438,862.98	1,723,256.30	39.75831132	-80.70523481
16,900.00	89.00	150.001	6,361.34	-8,589.82	6,087.44	14,438,776.39	1,723,306.29	39.75807306	-80.70505795
17,000.00	89.00	150.001	6,363.08	-8,676.41	6,137.43	14,438,689.80	1,723,356.28	39.75783481	-80.70488109
17,100.00	89.00	150.001	6,364.82	-8,763.00	6,187.42	14,438,603.21	1,723,406.27	39.75759656	-80.70470422
17,200.00	89.00	150.001	6,366.55	-8,849.59	6,237.41	14,438,516.62	1,723,456.26	39.75735831	-80.70452736
17,300.00	89.00	150.001	6,368.29	-8,936.18	6,287.40	14,438,430.03	1,723,506.25	39.75712005	-80.70435050
17,400.00	89.00	150.001	6,370.03	-9,022.77	6,337.39	14,438,343.44	1,723,556.25	39.75688180	-80.70417365
17,500.00	89.00	150.001	6,371.76	-9,109.36	6,387.38	14,438,256.85	1,723,606.24	39.75664355	-80.70399679
17,600.00	89.00	150.001	6,373.50	-9,195.95	6,437.37	14,438,170.26	1,723,656.23	39.75640529	-80.70381993
17,700.00	89.00	150.001	6,375.24	-9,282.54	6,487.37	14,438,083.67	1,723,706.22	39.75616704	-80.70364308
17,800.00	89.00	150.001	6,376.97	-9,369.13	6,537.36	14,437,997.08	1,723,756.21	39.75592879	-80.70346622
17,900.00	89.00	150.001	6,378.71	-9,455.72	6,587.35	14,437,910.49	1,723,806.20	39.75569053	-80.70328937
18,000.00	89.00	150.001	6,380.45	-9,542.31	6,637.34	14,437,823.90	1,723,856.19	39.75545228	-80.70311252
18,100.00	89.00	150.001	6,382.18	-9,628.90	6,687.33	14,437,737.31	1,723,906.18	39.75521402	-80.70293567
18,200.00	89.00	150.001	6,383.92	-9,715.49	6,737.32	14,437,650.72	1,723,956.17	39.75497577	-80.70275882
18,300.00	89.00	150.001	6,385.66	-9,802.08	6,787.31	14,437,564.13	1,724,006.16	39.75473751	-80.70258197
18,400.00	89.00	150.001	6,387.39	-9,888.67	6,837.30	14,437,477.54	1,724,056.16	39.75449925	-80.70240513
18,500.00	89.00	150.001	6,389.13	-9,975.26	6,887.29	14,437,390.95	1,724,106.15	39.75426100	-80.70222828
18,600.00	89.00	150.001	6,390.87	-10,061.85	6,937.28	14,437,304.36	1,724,156.14	39.75402274	-80.70205144
18,700.00	89.00	150.001	6,392.60	-10,148.44	6,987.28	14,437,217.77	1,724,206.13	39.75378449	-80.70187460
18,800.00	89.00	150.001	6,394.34	-10,235.03	7,037.27	14,437,131.18	1,724,256.12	39.75354623	-80.70169775
18,900.00	89.00	150.001	6,396.08	-10,321.62	7,087.26	14,437,044.59	1,724,306.11	39.75330797	-80.70152091
19,000.00	89.00	150.001	6,397.81	-10,408.21	7,137.25	14,436,958.00	1,724,356.10	39.75306971	-80.70134407
19,100.00	89.00	150.001	6,399.55	-10,494.80	7,187.24	14,436,871.41	1,724,406.09	39.75283146	-80.70116724
19,200.00	89.00	150.001	6,401.29	-10,581.39	7,237.23	14,436,784.82	1,724,456.08	39.75259320	-80.70099040
19,300.00	89.00	150.001	6,403.02	-10,667.98	7,287.22	14,436,698.23	1,724,506.07	39.75235494	-80.70081356
19,400.00	89.00	150.001	6,404.76	-10,754.57	7,337.21	14,436,611.64	1,724,556.07	39.75211668	-80.70063673
19,500.00	89.00	150.001	6,406.50	-10,841.16	7,387.21	14,436,525.05	1,724,606.06	39.75187842	-80.70045990
19,600.00	89.00	150.001	6,408.23	-10,927.75	7,437.20	14,436,438.46	1,724,656.05	39.75164016	-80.70028307
19,700.00	89.00	150.001	6,409.97	-11,014.34	7,487.19	14,436,351.87	1,724,706.04	39.75140190	-80.70010624
19,800.00	89.00	150.001	6,411.71	-11,100.93	7,537.18	14,436,265.28	1,724,756.03	39.75116364	-80.69992941
19,900.00	89.00	150.001	6,413.44	-11,187.52	7,587.17	14,436,178.69	1,724,806.02	39.75092538	-80.69975258
20,000.00	89.00	150.001	6,415.18	-11,274.11	7,637.16	14,436,092.10	1,724,856.01	39.75068712	-80.69957575
20,100.00	89.00	150.001	6,416.92	-11,360.71	7,687.15	14,436,005.51	1,724,906.00	39.75044886	-80.69939893
20,200.00	89.00	150.001	6,418.65	-11,447.30	7,737.14	14,435,918.92	1,724,956.00	39.75021060	-80.69922210
20,300.00	89.00	150.001	6,420.39	-11,533.89	7,787.13	14,435,832.33	1,725,006.00	39.74997234	-80.69904528
20,400.00	89.00	150.001	6,422.13	-11,620.48	7,837.13	14,435,745.74	1,725,056.00	39.74973408	-80.69886846
20,500.00	89.00	150.001	6,423.86	-11,707.07	7,887.12	14,435,659.15	1,725,106.00	39.74949582	-80.69869164

03/12/2021



4705102368

Planning Report - Geographic



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-14 HM (slot O)
Company:	Tug Hill Operating LLC	TVD Reference:	GL @ 754.00ft
Project:	Marshall County, West Virginia	MD Reference:	GL @ 754.00ft
Site:	Van Winkle	North Reference:	Grid
Well:	Van Winkle S-14 HM (slot O)	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,565.40	89.00	150.001	6,425.00	-11,763.69	7,919.81	14,435,602.52	1,725,138.66	39.74934000	-80.69857600
PBHL/TD 20565.40 MD/6425.00 TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Van Winkle S-14HM LP - hit/miss target - Shape - Point	0.00	0.000	6,183.00	302.25	953.72	14,447,668.44	1,718,172.58	39.78253800	-80.72322700
- plan misses target center by 0.06ft at 6630.84ft MD (6183.00 TVD, 302.28 N, 953.77 E)									
Van Winkle S-14HM PBI - plan hits target center - Point	0.00	0.000	6,425.00	-11,763.69	7,919.81	14,435,602.52	1,725,138.66	39.74934000	-80.69857600

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,100.00	1,100.00	0.00	0.00	KOP Begin 2°/100' build	
1,700.00	1,695.62	58.83	21.41	Begin 2°/100' build/turn	
1,875.78	1,867.33	91.86	39.14	Begin 12.86° tangent	
5,552.88	5,452.15	755.06	519.02	Begin 8°/100' build/turn	
6,230.57	6,045.23	605.66	746.94	Begin 10°/100' build/turn	
6,630.85	6,183.00	302.26	953.78	Begin 89.00° lateral	
20,565.40	6,425.00	-11,763.69	7,919.81	PBHL/TD 20565.40 MD/6425.00 TVD	

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Office of Oil and Gas
JAN 25 2021
WV Department of
Environmental Protection

WW-9
(4/16)

4705102368

API Number 47 - 051 - _____
Operator's Well No. Van Winkle S-14HM

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

FLUIDS/ CUTTINGS DISPOSAL & RECLAMATION PLAN

Operator Name Tug Hill Operating, LLC OP Code 494510851

Watershed (HUC 10) Fish Creek Quadrangle Glen Easton 7.5'

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

Will a pit be used? Yes No

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

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

Proposed Disposal Method For Treated Pit Wastes:

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

Will closed loop system be used? If so, describe: Yes - For vertical and horizontal drilling

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

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

Additives to be used in drilling medium? Barite for weight

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

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0109195) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1386426

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

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

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

Company Official Signature James A. Pancake
Company Official (Typed Name) James Pancake
Company Official Title Vice President - Geoscience

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FEB 03 2021
WV Department of
Environmental Protection

Subscribed and sworn before me this 13 day of JANUARY, 20 21

My commission expires _____
Notary Public
Commonwealth of Pennsylvania - Notary Sec
David Gabriel Detaito, Notary Public
Washington County
My commission expires February 16, 2024
Commission number 1267492
Member, Pennsylvania Association of Notaries

03/12/2021

4705102368

Form WW-9

Operator's Well No. Van Winkle S-14HM

Tug Hill Operating, LLC

Proposed Revegetation Treatment: Acres Disturbed 16.63 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
Annual Ryegrass	40
Spring Oats	96

Seed Type	lbs/acre
Orchard Grass	12
Ladino	3
White Clover	2

Attach:

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

Photocopied section of involved 7.5' topographic sheet.

Plan Approved by: Bang Hill

Comments: _____

Title: Oil and Gas Inspector

Date: 1-21-21

Field Reviewed? Yes No

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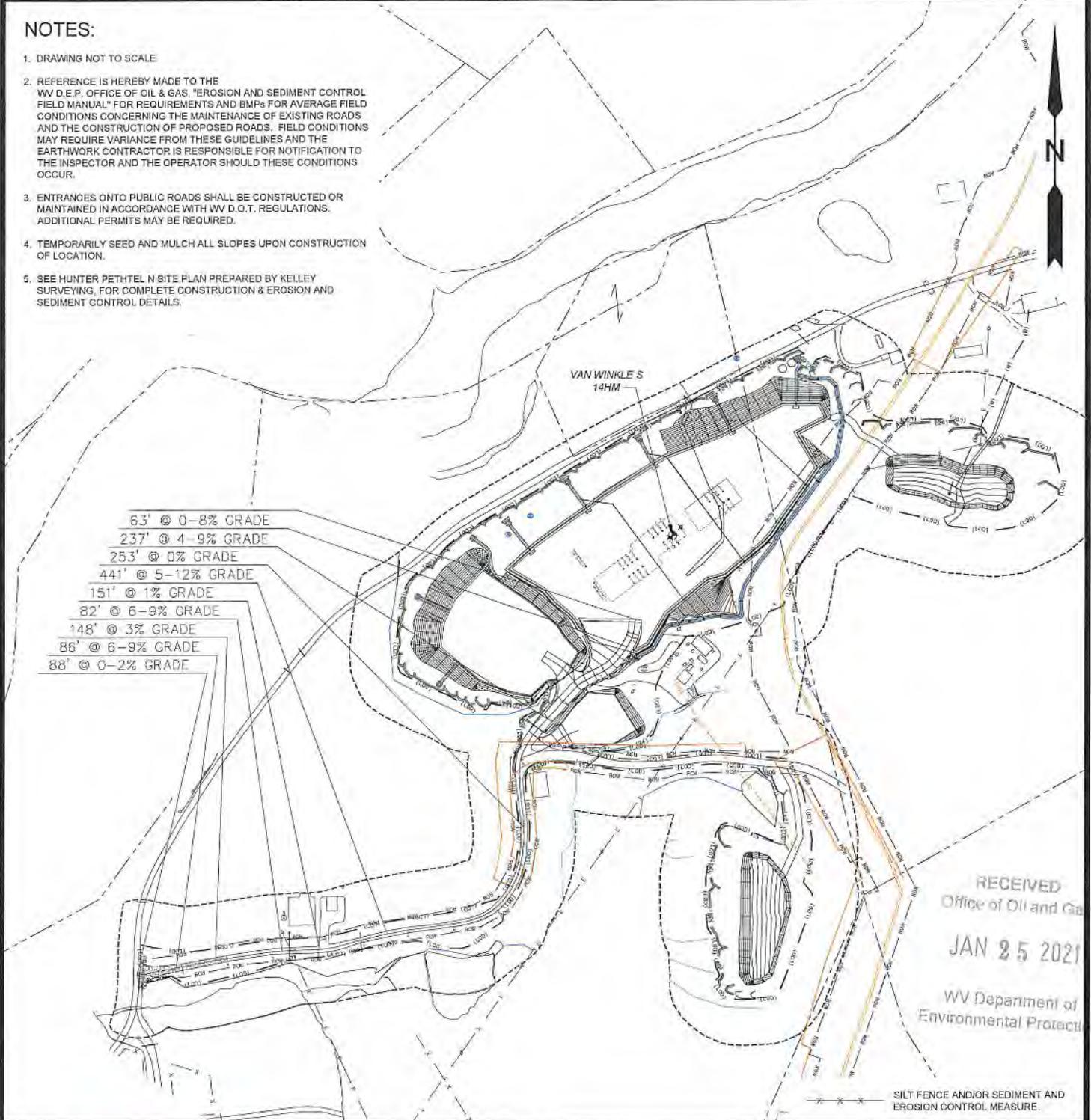
03/12/2021

PROPOSED VAN WINKLE S - 14HM

4705102360

NOTES:

1. DRAWING NOT TO SCALE
2. REFERENCE IS HEREBY MADE TO THE WV D.E.P. OFFICE OF OIL & GAS, "EROSION AND SEDIMENT CONTROL FIELD MANUAL" FOR REQUIREMENTS AND BMPs FOR AVERAGE FIELD CONDITIONS CONCERNING THE MAINTENANCE OF EXISTING ROADS AND THE CONSTRUCTION OF PROPOSED ROADS. FIELD CONDITIONS MAY REQUIRE VARIANCE FROM THESE GUIDELINES AND THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR NOTIFICATION TO THE INSPECTOR AND THE OPERATOR SHOULD THESE CONDITIONS OCCUR.
3. ENTRANCES ONTO PUBLIC ROADS SHALL BE CONSTRUCTED OR MAINTAINED IN ACCORDANCE WITH WV D.O.T. REGULATIONS. ADDITIONAL PERMITS MAY BE REQUIRED.
4. TEMPORARILY SEED AND MULCH ALL SLOPES UPON CONSTRUCTION OF LOCATION.
5. SEE HUNTER PETHTEL N SITE PLAN PREPARED BY KELLEY SURVEYING, FOR COMPLETE CONSTRUCTION & EROSION AND SEDIMENT CONTROL DETAILS.




12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
 254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
 slsvv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8952	12/24/2020	NONE



03/12/2021

4705102368



Well Site Safety Plan

Tug Hill Operating, LLC

Bay Stiles
1-21-21

Well Name: Van Winkle S-14HM

Pad Name: Hunter Pethel

UTM (meters), NAD83, Zone 17:

Northing: 4,403,566.06

Easting: 523,409.32

January 2021

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FEB 03 2021
WV Department of
Environmental Protection

03/12/2021

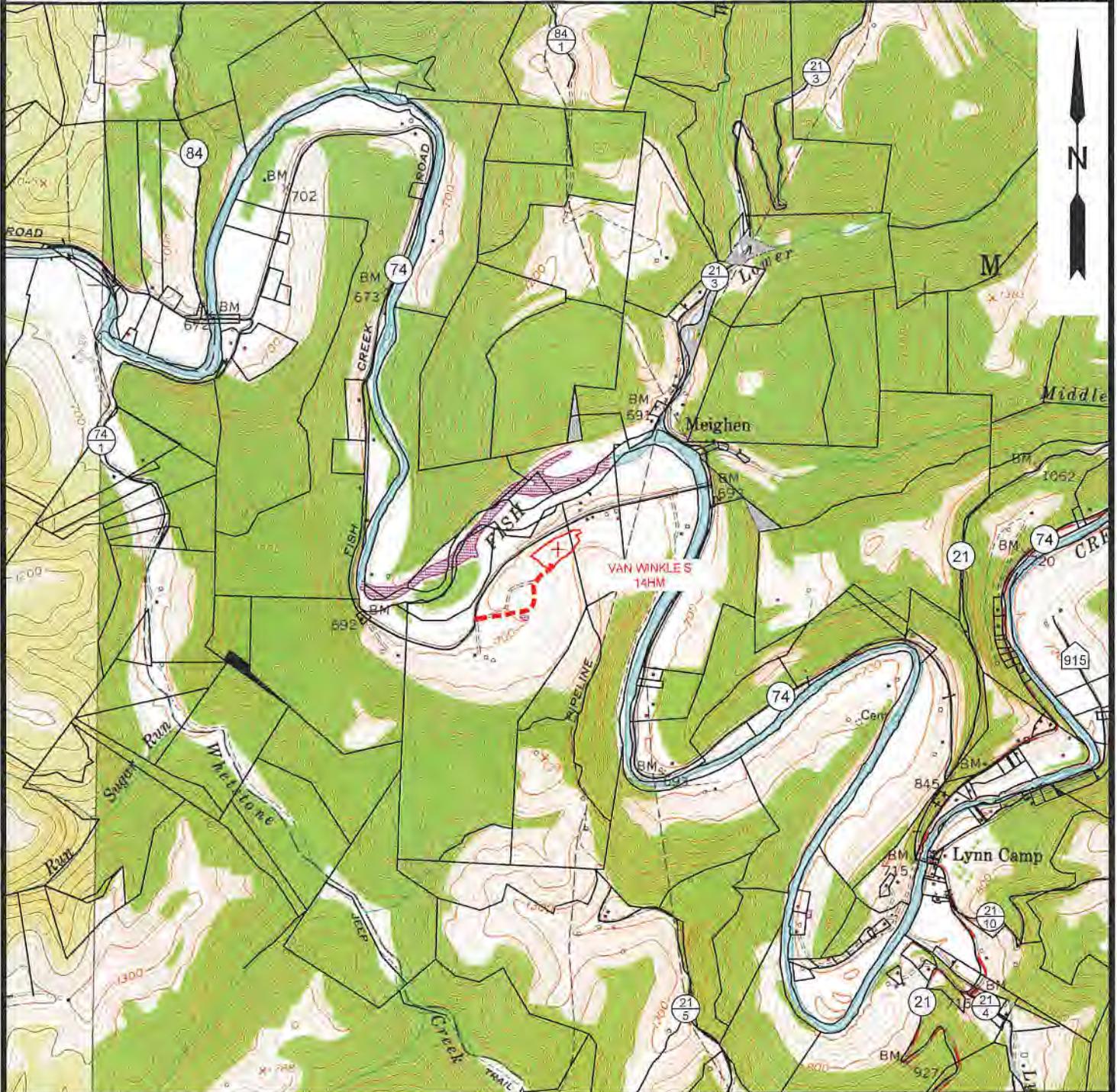
4705102368

WW-9

PROPOSED VAN WINKLE S - 14HM

Office of Oil and Gas
SUPPLEMENT PG. 2
JAN 25 2021

WV Department of
Environmental Protection



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

LAT: 39.7137712
LON: -80.8258327
LOCATED: S 49°13'48" W AT 37,316.19' FROM THE CENTER OF HUNTER PETHTEL N WELL PAD LOCATION.



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
1412 Kanawha Boulevard, East | Charleston, WV 25301 | 504.345.3992
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5295
slsw.com

TOPO SECTION:

GLEN EASTON 7.5'

COUNTY DISTRICT

MARSHALL MEADE

DRAWN BY JOB NO.

K.G.M. 8952

OPERATOR:

PREPARED FOR:
TUG HILL OPERATING, LLC
380 SOUTHPOINTE BLVD
SUITE 200
CANONSBURG, PA 15317

DATE SCALE

12/24/2020 1" - 2000'



TUG HILL
OPERATING

03/12/2021

**HUNTER PETHTEL LEASE
VAN WINKLE S 14HM WELL
TUG HILL OPERATING**

B.H.

8,972' B.H.

5,141' T.H.

T.H. LATITUDE 39°47'30"
B.H. LATITUDE 39°45'00"

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

NAD'83 S.P.C.(FT) N. 469,194.28 E. 1,623,783.04
NAD'83 GEO. LAT-(N) 39.781716 LONG-(W) 80.726625
NAD'83 UTM (M) N. 4,403,566.06 E. 523,409.32

LANDING POINT

NAD'83 S.P.C.(FT) N. 469,480.5 E. 1,624,742.2
NAD'83 GEO. LAT-(N) 39.782538 LONG-(W) 80.723227
NAD'83 UTM (M) N. 4,403,658.2 E. 523,700.1

BOTTOM HOLE

NAD'83 S.P.C.(FT) N. 457,295.8 E. 1,631,507.9
NAD'83 GEO. LAT-(N) 39.749340 LONG-(W) 80.698576
NAD'83 UTM (M) N. 4,399,980.4 E. 525,823.3

T.H.

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

241' B.H.

3,625' T.H.

PARCEL	SURFACE ADJOINER	ACRES
9-13-5.1	MICHAEL WALKER & JOSEPH BLAKE	3.26
9-13-16.1	IVAN H. & MARGARET A. RICHMOND	1.518
9-13-22.2	EUGENE A. SCHERRER	0.925
9-13-23	MARGARET FOX (LIFE)	1.52
9-16-10	IVAN H. & MARGARET A. RICHMOND	1.518
9-16-12.1	JAMES G. RICHMOND, ET UX	0.691
9-16-12.3	JAMES G. RICHMOND, ET UX	0.937
9-16-12.4	SHEILA TRUAX, ET VIR	0.516
9-16-12.5	TIMOTHY S. & GRETCHEN M. KIDD	1.23
9-16-12.6	SPENCY J. & CARRIE A. RICHMOND	0.141
9-16-12.7	SPENCY J. & CARRIE A. RICHMOND	0.55
9-16-12.8	IVAN H. & MARGARET A. RICHMOND	0.85
9-16-13.1	PAUL W. BLAKE (LIFE), WESLEY D. YEATER, JR., ET AL	0.91
9-16-13.2	ELEANOR M. FOX EST.	1.570
9-16-13.3	PAUL R. BLAKE	0.7538
9-16-13.4	JOHN FOX	0.533
9-16-13.5	PAUL R. BLAKE & PAUL R. BLAKE II	2.921
9-16-13.6	WESLEY D. YEATER, ET UX	2.144
9-16-16	CLINTON B. WHITELATCH, SR., ET UX, ESTS.	1 AC 5.6 P
9-16-17	ELEANOR M. FOX EST.	0.741
9-16-18.1	ROBIN D. & DAVID G. STEWART	3.333

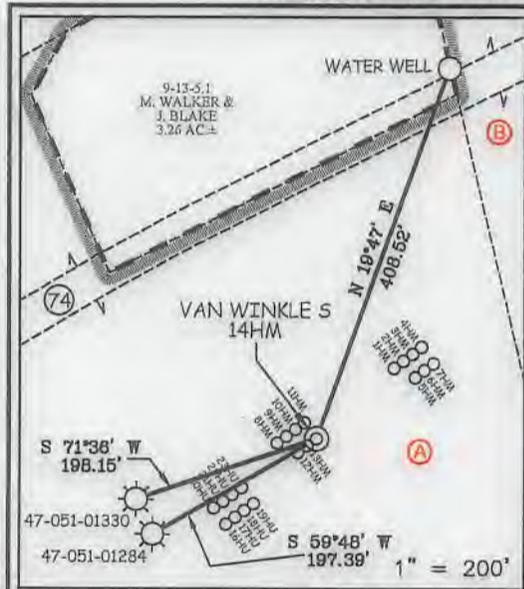
NOTES ON SURVEY

- NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
- WELL SPOT CIRCLE & TOPO MARK SCALE IS 1"=2000'.
- BASED ON WV DOT COUNTY ROUTE 74 IS A 40' STRIP OF LAND ACQUIRED IN NUMEROUS DEEDS.



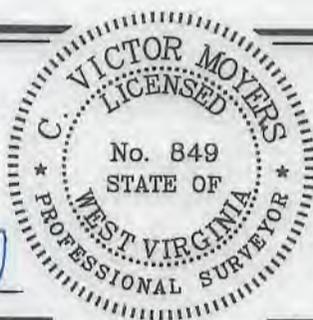
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1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
slsvwv.com

REFERENCES



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

P.S. *C. Victor Moyers*
849



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE JANUARY 20, 20 21
REVISED _____
OPERATORS WELL NO. VAN WINKLE S 14HM
API WELL NO. 47 - 051 - 02368
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8952P14HM.dwg
VAN WINKLE S 14HM-REV1
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

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



WELL TYPE: OIL ___ GAS X INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: GROUND: 756.00' ELEVATION PROPOSED: 753.50' WATERSHED FISH CREEK (HUC 10)
DISTRICT MEADE COUNTY MARSHALL QUADRANGLE GLEN EASTON 7.5'
SURFACE OWNER XCL MIDSTREAM OPERATING, LLC ACREAGE 190.12 ±
ROYALTY OWNER DENNIS HUNTER, ET AL - SEE WW-6A1 ACREAGE 90.2 ±
PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) TARGET FORMATION MARCELLUS ESTIMATED DEPTH TVD: 6,298' / TMD: 20,565'

COUNTY NAME

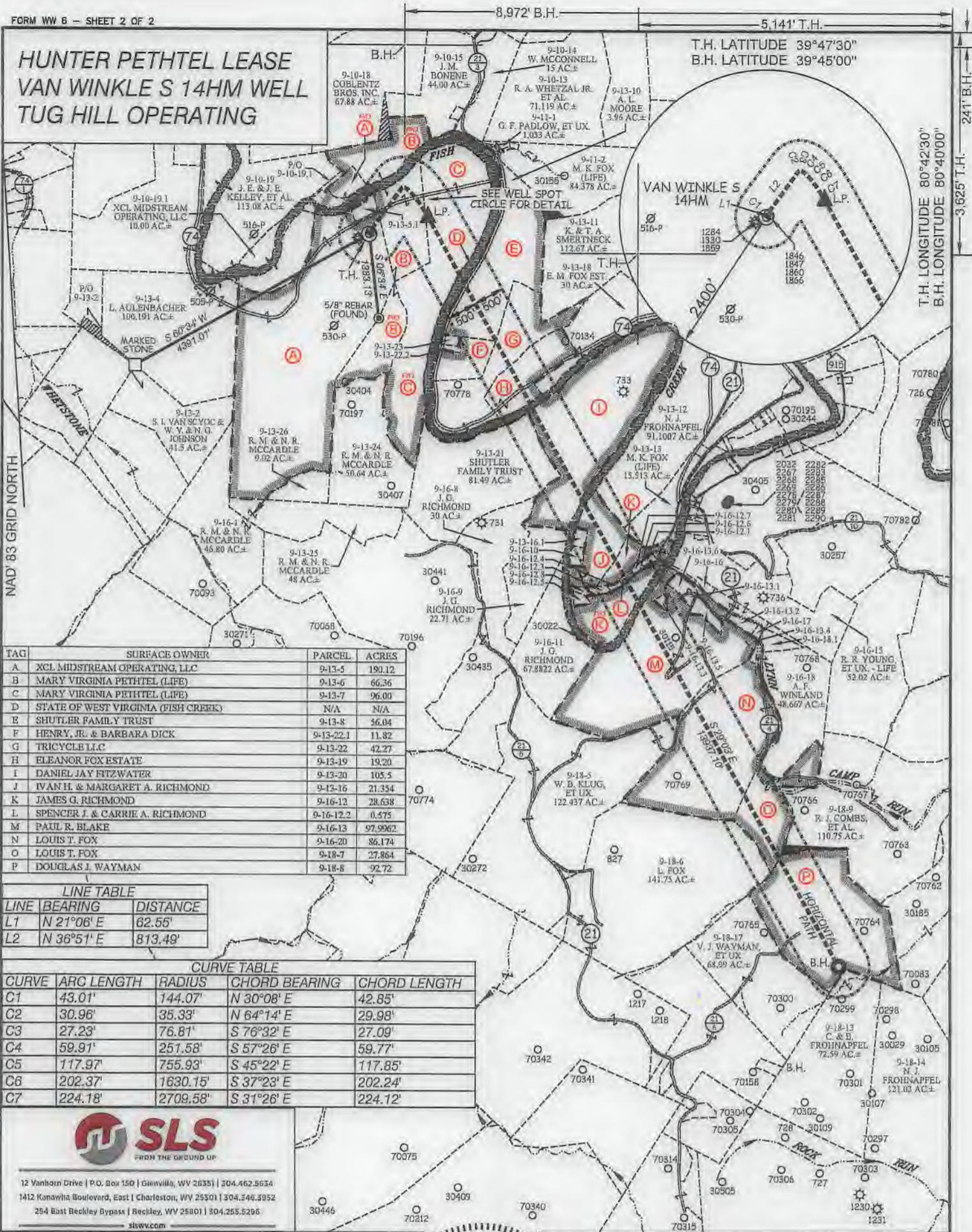
PERMIT

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

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

03/12/2021

HUNTER PETHTEL LEASE VAN WINKLE S 14HM WELL TUG HILL OPERATING



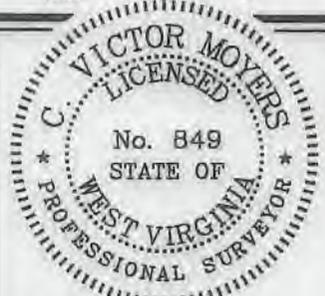
TAG	SURFACE OWNER	PARCEL	ACRES
A	XCL MIDSTREAM OPERATING, LLC	9-13-5	190.12
B	MARY VIRGINIA PETHTEL (LIFE)	9-13-6	66.36
C	MARY VIRGINIA PETHTEL (LIFE)	9-13-7	96.00
D	STATE OF WEST VIRGINIA (FISH CREEK)	N/A	N/A
E	SHUTLER FAMILY TRUST	9-13-8	56.04
F	HENRY, JR. & BARBARA DICK	9-13-22.1	11.82
G	TRICYCLE LLC	9-13-22	42.27
H	ELEANOR FOX ESTATE	9-13-19	19.20
I	DANIEL JAY FITZWATER	9-13-20	105.5
J	IVAN H. & MARGARET A. RICHMOND	9-13-16	21.354
K	JAMES G. RICHMOND	9-16-12	28.638
L	SPENCER J. & CARRIE A. RICHMOND	9-16-12.2	0.575
M	PAUL R. BLAKE	9-16-13	97.9962
N	LOUIS T. FOX	9-16-20	86.174
O	LOUIS T. FOX	9-18-7	27.864
P	DOUGLAS J. WAYMAN	9-18-8	92.72

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N 21°08' E	62.55'
L2	N 36°51' E	813.49'

CURVE TABLE				
CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	43.01'	144.07'	N 30°08' E	42.85'
C2	30.96'	35.33'	N 64°14' E	29.98'
C3	27.23'	76.81'	S 76°32' E	27.09'
C4	59.97'	251.58'	S 57°26' E	59.77'
C5	117.97'	755.93'	S 45°22' E	117.85'
C6	202.37'	1630.15'	S 37°23' E	202.24'
C7	224.18'	2709.58'	S 31°26' E	224.12'



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.5952
 254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
 slsw.com



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

P.S. 849 *C. Victor Moyers*

LEGEND

- LEASE LINE
- SURFACE LINE
- WELL LATERAL
- OFFSET LINE
- TIE LINE
- CREEK
- ROAD
- COUNTY ROUTE
- PROPOSED WELL
- EXISTING WELL
- PERMITTED WELL
- TAX MAP-PARCEL
- SURFACE OWNER (SEE TABLE)
- LEASE # (SEE WW-6A1)

SCALE 1" = 2000' FILE NO. 8952P-14HM.dwg
 VAN WINKLE S 14HM-REV1
 DATE JANUARY 20, 2021
 OPERATORS WELL NO. VAN WINKLE S 14HM
 API WELL NO. 47-051-02368
 STATE COUNTY PERMIT

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



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

COUNTY NAME PERMIT

WW-6A1
(5/13)

Operator's Well No. Van Winkle S-14HM

**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
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*See attached pages

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

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

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

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

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

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	
10*31312	9-13-5	A	DENNIS W HUNTER AND KATHY A HUNTER	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	668	155	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31303	9-13-6	B	MARY V PETHTEL AND FRANK E PETHTEL	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	668	525	N/A	N/A	N/A	N/A	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: 21/288 & 21/356	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31304	9-13-6	B	MARY V PETHTEL AND FRANK E PETHTEL	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	672	171	N/A	N/A	N/A	N/A	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: 21/288 & 21/356	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31306	9-13-6	B	RICHARD CUNNINGHAM	STONE ENERGY CORPORATION	1/8+	859	595	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31307	9-13-6	B	LINDA DANLEY	STONE ENERGY CORPORATION	1/8+	859	593	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31308	9-13-6	B	SUZY WALKER	STONE ENERGY CORPORATION	1/8+	859	591	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31303	9-13-7	C	MARY V PETHTEL AND FRANK E PETHTEL	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	668	525	N/A	N/A	N/A	N/A	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: 21/288 & 21/356	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31304	9-13-7	C	MARY V PETHTEL AND FRANK E PETHTEL	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	672	171	N/A	N/A	N/A	N/A	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: 21/288 & 21/356	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31305	9-13-7	C	MARY V PETHTEL AND FRANK E PETHTEL	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	677	401	N/A	N/A	N/A	N/A	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: 38/54	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31309	9-13-7	C	RICHARD CUNNINGHAM	STONE ENERGY CORPORATION	1/8+	870	122	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31310	9-13-7	C	SUSAN WALKER	STONE ENERGY CORPORATION	1/8+	870	139	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21

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WV Department of Environmental Protection

4705102368

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment							
10*31311	9-13-7	C	LINDA DANLEY	STONE ENERGY CORPORATION	1/8+	870	141	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*23458	FISH CREEK	D	WEST VIRGINIA DIVISION OF NATURAL RESOURCES	TH EXPLORATION LLC	1/8+	1019	373	N/A	N/A						
10*28299	9-13-8	E	THE SHUTLER FAMILY TRUST	TH EXPLORATION LLC	1/8+	1070	425	N/A	N/A						
10*27247	9-13-22.1	F	DANIEL R JOHNSON AND JOANNA L JOHNSON	TH EXPLORATION LLC	1/8+	1053	3	N/A	N/A						
10*27248	9-13-22.1	F	NILA K MOWDER AND THOMAS R MOWDER	TH EXPLORATION LLC	1/8+	1053	5	N/A	N/A						
10*27835	9-13-22.1	F	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1058	124	N/A	N/A						
10*28266	9-13-22.1	F	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1062	264	N/A	N/A						
10*28267	9-13-22.1	F	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1062	266	N/A	N/A						
10*27247	9-13-22	G	DANIEL R JOHNSON AND JOANNA L JOHNSON	TH EXPLORATION LLC	1/8+	1053	3	N/A	N/A						
10*27248	9-13-22	G	NILA K MOWDER AND THOMAS R MOWDER	TH EXPLORATION LLC	1/8+	1053	5	N/A	N/A						
10*27835	9-13-22	G	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1058	124	N/A	N/A						
10*28267	9-13-22	G	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1062	266	N/A	N/A						
10*29453	9-13-22	G	TRICYCLE LLC	TH EXPLORATION LLC	1/8+	1096	307	N/A	N/A						
10*31362	9-13-22	G	TRICYCLE LLC	STONE ENERGY CORPORATION	1/8+	881	615	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*18351	9-13-19	H	MARK ALLEN LENENBERG	TH EXPLORATION LLC	1/8+	931	399	N/A	N/A						
10*18469	9-13-19	H	THOMAS RICHMOND YOUNG ANITA A YOUNG	TH EXPLORATION LLC	1/8+	933	151	N/A	N/A						
10*18470	9-13-19	H	CHERYL STEFFEN AND GREGORY STEFFEN	TH EXPLORATION LLC	1/8+	933	148	N/A	N/A						
10*18527	9-13-19	H	ANN TURNER YOUNG SHRIVER	TH EXPLORATION LLC	1/8+	933	589	N/A	N/A						
10*18694	9-13-19	H	PEGGY A GOULDSBERRY AND JOSEPH W GOULDSBERRY	TH EXPLORATION LLC	1/8+	938	283	N/A	N/A						
10*18695	9-13-19	H	JOSEPH S EMERY	TH EXPLORATION LLC	1/8+	938	572	N/A	N/A						
10*18696	9-13-19	H	CHARLES E EMERY AND DEBBIE EMERY	TH EXPLORATION LLC	1/8+	938	280	N/A	N/A						
10*18697	9-13-19	H	CHRYSYAL L RINE AND JOHN O RINE	TH EXPLORATION LLC	1/8+	938	499	N/A	N/A						
10*18698	9-13-19	H	LORETTA K CONNER AND OBERT L CONNER	TH EXPLORATION LLC	1/8+	938	490	N/A	N/A						
10*18699	9-13-19	H	JAMIE A LANTZ AND JAMES L LANTZ	TH EXPLORATION LLC	1/8+	938	286	N/A	N/A						
10*18700	9-13-19	H	NOVA PAYNE	TH EXPLORATION LLC	1/8+	938	488	N/A	N/A						
10*18701	9-13-19	H	SHERRI J ANDERSON AND GEORGE C ANDERSON	TH EXPLORATION LLC	1/8+	938	277	N/A	N/A						
10*18702	9-13-19	H	JOHN W NICE JR	TH EXPLORATION LLC	1/8+	938	496	N/A	N/A						
10*18703	9-13-19	H	GREGORY W FRITZMAN	TH EXPLORATION LLC	1/8+	938	558	N/A	N/A						
10*18714	9-13-19	H	LARRY J RICHARDSON AND D MARGARET RICHARDSON	TH EXPLORATION LLC	1/8+	938	543	N/A	N/A						
10*18715	9-13-19	H	MARY ANN CROW RICHARDSON	TH EXPLORATION LLC	1/8+	938	546	N/A	N/A						
10*18716	9-13-19	H	MARCIA J MECHLING AND DENNIS J MECHLING	TH EXPLORATION LLC	1/8+	938	549	N/A	N/A						
10*18717	9-13-19	H	RACHEL E AND ALLAN L SHEASLEY	TH EXPLORATION LLC	1/8+	938	552	N/A	N/A						
10*18718	9-13-19	H	PEGGY L STEWART AND DEWEY R STEWART	TH EXPLORATION LLC	1/8+	938	555	N/A	N/A						
10*18719	9-13-19	H	DONNA M CROW	TH EXPLORATION LLC	1/8+	938	504	N/A	N/A						
10*18829	9-13-19	H	CAROL A SAVOY	TH EXPLORATION LLC	1/8+	937	620	N/A	N/A						
10*18958	9-13-19	H	NANCY L GABLER	TH EXPLORATION LLC	1/8+	941	259	N/A	N/A						
10*18959	9-13-19	H	SALLY L DUNMIRE AND DAVID W DUNMIRE	TH EXPLORATION LLC	1/8+	941	270	N/A	N/A						
10*18967	9-13-19	H	NATALIE GIBBS	TH EXPLORATION LLC	1/8+	941	266	N/A	N/A						
10*19461	9-13-19	H	KELLY OCONNOR	TH EXPLORATION LLC	1/8+	942	569	N/A	N/A						
10*19516	9-13-19	H	JAMES E NICHOLAS AND BEVERLY D NICHOLAS	TH EXPLORATION LLC	1/8+	944	366	N/A	N/A						
10*19611	9-13-19	H	JOHN H EMERY AND JANET M EMERY	TH EXPLORATION LLC	1/8+	944	201	N/A	N/A						
10*19612	9-13-19	H	MARY JANE HYDE AND HARRY K HYDE	TH EXPLORATION LLC	1/8+	944	198	N/A	N/A						
10*19613	9-13-19	H	SHEILA LYNN GARRISON	TH EXPLORATION LLC	1/8+	944	196	N/A	N/A						
10*19832	9-13-19	H	DOWNIE E EMERY JR AND ELAINE EMERY	TH EXPLORATION LLC	1/8+	945	619	N/A	N/A						
10*19834	9-13-19	H	STEVEN D BEAKLEY	TH EXPLORATION LLC	1/8+	945	613	N/A	N/A						
10*19835	9-13-19	H	BARBARA JEAN SAMAJ AND ANDREW J SAMAJ	TH EXPLORATION LLC	1/8+	945	616	N/A	N/A						
10*19892	9-13-19	H	REX B FISHER AND DEBORAH FISHER	TH EXPLORATION LLC	1/8+	948	292	N/A	N/A						
10*19981	9-13-19	H	WILLIAM G EMERY	TH EXPLORATION LLC	1/8+	948	206	N/A	N/A						

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JAN 25 2014
WV Department of Environmental Protection

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*21014	9-13-19	H	JAMES P MCLAUGHLIN & ALICE W MCLAUGHLIN	TH EXPLORATION LLC	1/8+	946	29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21015	9-13-19	H	ROBERT L MCLAUGHLIN	TH EXPLORATION LLC	1/8+	946	339	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21051	9-13-19	H	JAMES S NEPERENY AND PHOBE A NEPERENY	TH EXPLORATION LLC	1/8+	966	501	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21139	9-13-19	H	JOHN C BAKER JR AND TRACIE L BAKER	TH EXPLORATION LLC	1/8+	952	167	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21251	9-13-19	H	GREGORY R BAKER AND TRACEY L BAKER	TH EXPLORATION LLC	1/8+	953	62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21318	9-13-19	H	LINDA D GORDON AND JOHN L GORDON	TH EXPLORATION LLC	1/8+	944	204	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21341	9-13-19	H	RITA M BAKER	TH EXPLORATION LLC	1/8+	953	225	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21485	9-13-19	H	ROBERT R FISHER AND AUDREY L IRVIN	TH EXPLORATION LLC	1/8+	942	572	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21504	9-13-19	H	PAULETA LINDA CHEATHAM AND CARL WOHLERS	TH EXPLORATION LLC	1/8+	951	142	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21598	9-13-19	H	THE MILDRED Y MILLS TRUST JULY 5TH 2007	TH EXPLORATION LLC	1/8+	954	332	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21613	9-13-19	H	ROBERT MATTHEW KEDWARD	TH EXPLORATION LLC	1/8+	959	462	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21614	9-13-19	H	NICOLE RAE BRACHER-MUSTY AND JASON BRACHER-MUSTY	TH EXPLORATION LLC	1/8+	959	464	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21709	9-13-19	H	THOMAS YOUNG AND JANE CLAIRE YOUNG	TH EXPLORATION LLC	1/8+	959	350	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21710	9-13-19	H	PENELOPE A JONES	TH EXPLORATION LLC	1/8+	959	355	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22002	9-13-19	H	DAVID E EMERY SR	TH EXPLORATION LLC	1/8+	953	223	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22038	9-13-19	H	SANDRA C SHAFFER AND RONALD G SHAFFER	TH EXPLORATION LLC	1/8+	954	334	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22271	9-13-19	H	MARY ANN CROW RICHARDSON LT ETAL	TH EXPLORATION LLC	1/8+	988	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22294	9-13-19	H	THOMAS E WELLMAN AND LISA M WELLMAN	TH EXPLORATION LLC	1/8+	962	279	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22415	9-13-19	H	PAUL A YOUNG	TH EXPLORATION LLC	1/8+	963	344	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22497	9-13-19	H	BRANDON C CANFIELD	TH EXPLORATION LLC	1/8+	966	622	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22863	9-13-19	H	JAMES H CAMPBELL	TH EXPLORATION LLC	1/8+	977	55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22864	9-13-19	H	MARGARET R DONOFRIO	TH EXPLORATION LLC	1/8+	977	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23190	9-13-19	H	NELSON RICHMOND ET AL by HERMAN LANTZ, AS SPECIAL COMMISSIONER	TH EXPLORATION LLC	1/8+	979	191	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23250	9-13-19	H	BUENA WELLMAN ET AL C/O HERMAN LANTZ, SPECIAL COMMISSIONER	TH EXPLORATION LLC	1/8+	979	189	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*27947	9-13-19	H	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063	568	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17193	9-13-20	I	JOHN P. ICARD	CHESAPEAKE APPALACHIA LLC	1/8+	716	12	N/A	N/A	Chesapeake Appalachia LLC to Statoil USA Onshore Properties Inc: 29/325	Statoil USA Onshore Properties Inc to SWN Exchange Titleholder LLC: 33/424	Cert of Merger of SWN Exchange Titleholder LLC to SWN Production Company LLC: 19/624	Chesapeake Appalachia LLC to SWN Production Co. LLC: 33/110	SWN Production Company LLC to TH Exploration LLC: 41/256	Statoil USA Onshore Properties Inc to TH Exploration LLC: 41/238
10*18351	9-13-20	I	MARK ALLEN LENENBERG	TH EXPLORATION LLC	1/8+	931	399	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18456	9-13-20	I	DANIEL J FITZWATER	TH EXPLORATION LLC	1/8+	933	180	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18469	9-13-20	I	THOMAS RICHMOND YOUNG ANITA A YOUNG	TH EXPLORATION LLC	1/8+	933	151	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18470	9-13-20	I	CHERYL STEFFEN AND GREGORY STEFFEN	TH EXPLORATION LLC	1/8+	933	148	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18471	9-13-20	I	MORGAN C GUMP AND MARY J GUMP	TH EXPLORATION LLC	1/8+	942	210	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18472	9-13-20	I	LEIGH A DURRAH	TH EXPLORATION LLC	1/8+	933	136	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18524	9-13-20	I	DAVID A GUMP AND BETTY J GUMP	TH EXPLORATION LLC	1/8+	933	597	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18527	9-13-20	I	ANN TURNER YOUNG SHRIVER	TH EXPLORATION LLC	1/8+	933	589	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*18967	9-13-20	I	NATALIE GIBBS	TH EXPLORATION LLC	1/8+	941	266	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19349	9-13-20	I	MARJOLEA A DEBOLD	TH EXPLORATION LLC	1/8+	932	409	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19516	9-13-20	I	JAMES E NICHOLAS AND BEVERLY D NICHOLAS	TH EXPLORATION LLC	1/8+	944	366	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19883	9-13-20	I	JILL A WILLIAMS AND TERRY L WILLIAMS	TH EXPLORATION LLC	1/8+	948	547	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19885	9-13-20	I	NANCY L RICHMOND AND GREGORY RICHMOND	TH EXPLORATION LLC	1/8+	948	549	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19886	9-13-20	I	MARK A RICHMOND & LISA D RICHMOND	TH EXPLORATION LLC	1/8+	948	543	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19887	9-13-20	I	ELIZABETH S SCOVELL & JONATHAN A SCOVELL	TH EXPLORATION LLC	1/8+	948	545	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*19892	9-13-20	I	REX B FISHER AND DEBORAH FISHER	TH EXPLORATION LLC	1/8+	948	292	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21012	9-13-20	I	TIMOTHY R RICHMOND II AND BRANDI N RICHMOND	TH EXPLORATION LLC	1/8+	951	149	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21014	9-13-20	I	JAMES P MCLAUGHLIN & ALICE W MCLAUGHLIN	TH EXPLORATION LLC	1/8+	946	29	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21015	9-13-20	I	ROBERT L MCLAUGHLIN	TH EXPLORATION LLC	1/8+	946	339	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21485	9-13-20	I	ROBERT R FISHER AND AUDREY L IRVIN	TH EXPLORATION LLC	1/8+	942	572	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21504	9-13-20	I	PAULETA LINDA CHEATHAM AND CARL WOHLERS	TH EXPLORATION LLC	1/8+	951	142	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Environmental Protection

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book/Page		Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*21598	9-13-20	I	THE MILDRED Y MILLS TRUST JULY 5TH 2007	TH EXPLORATION LLC	1/8+	954	332	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21709	9-13-20	I	THOMAS YOUNG AND JANE CLAIRE YOUNG	TH EXPLORATION LLC	1/8+	959	350	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21710	9-13-20	I	PENELOPE A JONES	TH EXPLORATION LLC	1/8+	959	355	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22863	9-13-20	I	JAMES H CAMPBELL	TH EXPLORATION LLC	1/8+	977	55	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*22864	9-13-20	I	MARGARET R DONOFRIO	TH EXPLORATION LLC	1/8+	977	53	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23164	9-13-20	I	J C RICHMOND AND MARY RICHMOND	TG STILES	1/8+	63	154	South Penn Oil Company to Tri-State Gas Company: 80/150	Tri-State Gas Company to The Manufacturers Light & Heat Company: 148/388	The Manufacturers Light & Heat Company to AM Snider & Duane M Sniders, Partners dba Hundred Gas Company: 4/489	Hundred Gas Company to Carl D Perkins: 451/132	Carl D Perkins to Perkins Oil and Gas Inc: 583/72	Perkins Oil & Gas Inc to Stone Energy Corporation: 26/322	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*23190	9-13-20	I	NELSON RICHMOND ET AL by HERMAN LANTZ, AS SPECIAL COMMISSIONER	TH EXPLORATION LLC	1/8+	979	191	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*27947	9-13-20	I	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1063	568	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*28158	9-13-20	I	STONE HILL MINERALS HOLDINGS LLC	TH EXPLORATION LLC	1/8+	1068	140	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*17895	9-13-16	J	IVAN H RICHMOND AND MARGARET A RICHMOND	TH EXPLORATION LLC	1/8+	924	543	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*16481	9-16-12	K	JAMES G RICHMOND AND CINDY L RICHMOND	FOSSIL CREEK OHIO, LLC	1/8+	829	71	N/A	N/A	N/A	N/A	N/A	Fossil Creek Ohio LLC to Gulfport Energy Corporation: 32/307 & 34/410	Gulfport Energy Corp & Fossil Creek Ohio LLC to American Petroleum Partners Operating LLC: 36/588	American Petroleum Partners Operating LLC to TH Exploration LLC: 42/109
10*31359	9-16-12.2	L	JAMES G RICHMOND	STONE ENERGY CORPORATION	1/8+	872	359	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*47051.135.0	9-16-13	M	PAUL R BLAKE	TH EXPLORATION LLC	1/8+	878	280	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*23726	9-16-20	N	LOUIS T FOX	TH EXPLORATION LLC	1/8+	1011	520	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*27395	9-16-20	N	LYNN CAMP UNITED METHODIST CHURCH	TH EXPLORATION LLC	1/8+	1058	376	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*21293	9-18-7	O	LOUIS T FOX AND KAREN A FOX	TH EXPLORATION LLC	1/8+	952	364	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.152.1	9-18-8	P	TAMMY JO LONG	TH EXPLORATION LLC	1/8+	860	361	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10*47051.152.2	9-18-8	P	DOUGLAS J WAYMAN	TH EXPLORATION LLC	1/8+	865	350	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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Office of Oil and Gas

JAN 25 2021

WV Department of
Environmental Protection

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ASSIGNMENT AND BILL OF SALE

This ASSIGNMENT AND BILL OF SALE (this "*Assignment*") dated as of December 1, 2020 (the "*Execution Date*"), is made by and between EQT PRODUCTION COMPANY, a Pennsylvania corporation, with an address at 625 Liberty Avenue, Suite 1700, Pittsburgh, Pennsylvania 15222 ("*EQT*"), and TH EXPLORATION, LLC, a Texas limited liability company, with an address at 1320 S. University Drive, Suite 500, Fort Worth, Texas 76107 ("*TH*") pursuant to the terms of that certain Acreage Trade Agreement by and among EQT, TH and TH Exploration II, LLC ("*TH II*"), dated July 8, 2020 (the "*Agreement*"). EQT and TH may be referred to herein together as the "*Parties*", and each individually as a "*Party*".

RECITALS

WHEREAS, EQT desires to transfer, convey and assign to TH certain of EQT's oil and gas leasehold interests located in Marshall County, West Virginia set forth on Exhibit A attached hereto and incorporated herein ("*EQT Leases*") in accordance with this Assignment and the Agreement; and

WHEREAS, TH desires to receive from EQT, all of EQT's right, title and interest in and to the EQT Leases in accordance with this Assignment and the Agreement.

NOW, THEREFORE, for and in consideration of the mutual promises contained herein and in the Agreement, the benefits to be derived by each Party hereunder and under the Agreement, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby agree as follows:

ARTICLE I
DEFINED TERMS

1.1 *Definitions.* Capitalized terms used herein and not otherwise defined throughout this Assignment shall have the meanings given such terms in the Agreement.

ARTICLE II
ASSIGNMENT OF ASSETS

2.1 *Assignment.* Subject to the terms and conditions of this Assignment and the Agreement, EQT does hereby assign, convey and transfer to TH all of the right, title and interest of EQT in and to the following (collectively for purposes of this Assignment, the "*EQT Assets*"):

(a) Subject to the conveyance of the Wells Assets from EQT to TH II as described in the Agreement, the EQT Leases and appurtenances thereto (including rights of access and to install facilities), all Hydrocarbons within, produced from, derived from, or sold from the EQT Leases (and all proceeds related thereto), on and after the Valuation Date, and all Surface Contracts including but not limited to those set forth on Exhibit B attached hereto and incorporated herein (the "*EQT Surface Contracts*") related to the EQT Leases and such Hydrocarbons; and

(b) Copies of deeds, files and all other ownership information directly related to the acquisition, operations and maintenance of the EQT Leases, lease files for the EQT Leases

ASSIGNMENT AND CONVEYANCE

This Assignment and Conveyance (this "*Assignment*") is from STATOIL USA ONSHORE PROPERTIES INC., a Delaware corporation ("*Assignor*"), to TH Exploration, LLC, a Texas limited liability company ("*Assignee*"), and is executed on December 18, 2017 (the "*Effective Date*"). Assignor and Assignee may be referred to herein collectively as the "*Parties*," or individually as a "*Party*." Capitalized terms used herein but not otherwise defined herein (including in Section 3.7) shall have the meanings given such terms in that certain Acreage Trade Agreement between the Assignor and the Assignee dated August 24, 2017 (the "*Acreage Trade Agreement*").

**ARTICLE 1
ASSIGNMENT OF ASSETS**

Section 1.1 Assignment. For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Assignor hereby GRANTS, BARGAINS, ASSIGNS, CONVEYS AND TRANSFERS unto Assignee all of Assignor's right, title and interest in and to (i) the oil and gas leases described in more detail on Exhibit A attached hereto (the "*Leases*") INSOFAR AND ONLY INSOFAR as they cover those lands described on Exhibit A (the "*Leasehold Rights*") and (ii) any surface use agreements that relate to such Leasehold Rights (collectively with the Leasehold Rights, the "*Conveyed Assets*").

TO HAVE AND TO HOLD the Conveyed Assets, together with all and singular the rights, privileges, contracts and appurtenances, in any way appertaining or belonging thereto, unto Assignee, its successors and assigns, forever, subject, to the terms and conditions of this Assignment.

Section 1.2 Assignment Subject to Acreage Trade Agreement. This Assignment is made in accordance with and is subject to the terms, covenants and conditions contained in that certain Acreage Trade Agreement. In the event of a conflict between the provisions of the Acreage Trade Agreement and this Assignment, the provisions of the Acreage Trade Agreement shall control. The execution and delivery of this Assignment by Assignor, and the execution and acceptance of this Assignment by Assignee, shall not operate to release or impair any surviving rights or obligations of either Party with respect to the other under the Acreage Trade Agreement.

**ARTICLE 2
SPECIAL WARRANTY OF TITLE AND DISCLAIMERS**

Section 2.1 Special Warranty of Title. Assignor hereby agrees to warrant and defend Defensible Title to the Leases unto Assignee, its successors and assigns, against every Person whomsoever lawfully claiming or to claim the same or any part thereof by, through or under Assignor or any of its Affiliates, but not otherwise.

Section 2.2 Disclaimers of Warranties and Representations.

(a) EXCEPT AS EXPRESSLY REPRESENTED OTHERWISE IN SECTION VI OF THE ACREAGE TRADE AGREEMENT OR THIS ASSIGNMENT, ASSIGNOR MAKES NO, AND HEREBY EXPRESSLY DISCLAIMS, ANY REPRESENTATION OR

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STATE OF WEST VIRGINIA §
§
COUNTY OF MARSHALL §

ASSIGNMENT AND CONVEYANCE

THIS ASSIGNMENT AND CONVEYANCE (the "Assignment") is made and entered into this 18th day of May, 2018, and made effective December 12, 2017 (the "Effective Date"), by and between AMERICAN PETROLEUM PARTNERS OPERATING, LLC, (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 December 12, 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"); and

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

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

1. Assignment. Assignor does hereby grant, bargain, sell, convey, deliver, assign, set over and transfer, as of the Effective Date, to Assignee, its respective successors and assigns, forever, all of Assignor's right, title and interest in and to the Leases, and the lands covered thereby, together with all rights incident thereto and appurtenances thereon.

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

2. Special Warranty. Assignor represents and warrants that Assignor has not conveyed or otherwise encumbered (other than Permitted Encumbrances) its interest in the

Marshall County
Jan Pest, Clerk
Instrument 1440060
05/25/2018 @ 02:36:09 PM
ASSIGNMENTS
Book 42 @ Page 109
Pages Recorded 9
Recording Cost \$ 15.00

WI-AGIR-0009

03/12/2021



January 21, 2020

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

RE: Van Winkle S-14HM

Subject: Marshall County Route 74 Road Crossing Letter

Dear Wade:

Tug Hill Operating, LLC (THO) hereby submits this letter as confirmation that THO has obtained the right to drill, extract and produce the minerals under Marshall County Route 74 in the area reflected on the Van Winkle S-14HM well plat. THO has conducted a full title search in the relevant Court House to confirm its ownership under said County Routes and is not currently aware of any recorded document that would suggest an ownership other than THO.

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

Sincerely,

A handwritten signature in blue ink that reads "Amy Morris". The signature is written in a cursive, flowing style.

Amy Morris
Permit Specialist – Appalachia Region
Cell 304-376-0111
Email: amiller@tug-hilop.com

03/12/2021

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

Date of Notice Certification: 01/22/2021

API No. 47- 051 -

Operator's Well No. Van Winkle S-14HM

Well Pad Name: Hunter Pathel

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>523,409.32</u>
County:	<u>Marshall</u>		Northing:	<u>4,403,566.06</u>
District:	<u>Meade</u>	Public Road Access:	<u>County Route 74</u>	
Quadrangle:	<u>Glen Easton 7.5'</u>	Generally used farm name:	<u>XcL Midstream Operating, LLC</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: 40px;"><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 checked="" type="checkbox"/> RECEIVED</p> <p><input type="checkbox"/> RECEIVED/ NOT REQUIRED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p> <p><input checked="" type="checkbox"/> RECEIVED</p>
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Required Attachments:

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

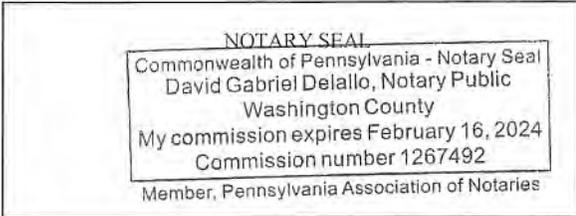
03/12/2021

Certification of Notice is hereby given:

THEREFORE, I Amy L. Morris, 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: Tug Hill Operating, LLC
By: *Amy L. Morris*
Its: Permitting Specialist - Appalachia Region
Telephone: 724-749-8388

Address: 380 Southpointe Boulevard, Plaza II, Suite 200
Canonsburg, PA 15317
Facsimile: 724-338-2030
Email: amorris@tug-hilop.com



Subscribed and sworn before me this 21 day of January, 2021.
David Gabriel Delallo Notary Public
My Commission Expires 2/16/24

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.

WW-6A
(9-13)

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API NO. 47- 051 -
OPERATOR WELL NO. Van Winkle S-14HM
Well Pad Name: Hunter Pethtel

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: 1/26/2021 **Date Permit Application Filed:** 1/22/2021

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: XcL Midstream Operating, LLC (Well Pad & Access Road)
Address: 380 Southpointe Boulevard, Plaza II, Suite 215
Canonsburg, PA 15317

Name: Frank E. & Mary Virginia Pethtel, Life Estate (Well Pad)
Address: 9845 Fish Creek Road
Glen Easton, WV 26039

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

Name: Regina M. & Aaron D. Murray, Remainderman
Address: 5 Mound Manor
St. Mary's, WV 26170

Name: _____
Address: _____

SURFACE OWNER(s) (Impoundments or Pits)

Name: _____
Address: _____

COAL OWNER OR LESSEE

Name: CNX Land, LLC
Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

COAL OPERATOR

Name: _____
Address: _____

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

Name: *See attached
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

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WV Department of
Environmental Protection

03/12/2021

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

WW-6A
(8-13)

API NO. 47-051 - _____
OPERATOR WELL NO. Van Winkle S-14HM
Well Pad Name: Hunter Pethel

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

Water Well Testing:

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

Water Testing Laboratories:

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

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

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

Written Comment:

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

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

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

03/12/2021

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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03/12/2021

WW-6A
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4705102368

API NO. 47-051 -
OPERATOR WELL NO. Van Winkle S-14HM
Well Pad Name: Hunter Pethtel

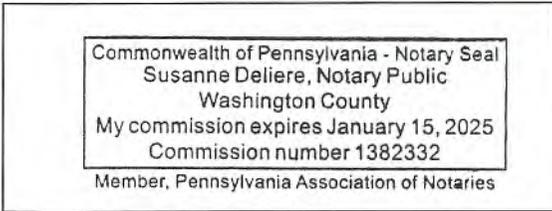
Notice is hereby given by:

Well Operator: Tug Hill Operating, LLC
Telephone: 724-749-8388
Email: amorris@tug-hilltop.com *amy Morris*

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.



Subscribed and sworn before me this 26th day of January 2021
Susanne Deliere Notary Public
My Commission Expires 1/15/2025

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03/12/2021

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

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

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

Well: Van Winkle S – 14HM
District: Meade
State: WV

There are four (4) possible residences, one (1) possible commercial or business site, no churches, no schools and no emergency facilities within two-thousand feet (2,000') of the above referenced well location. Number 6 is a water well only and is not a residence.

<p>Residence (#1) TM 13 Pcl. 6 Mary Virginia Pethtel Phone: 304-684-2646, 304-845-3423 Physical Address: None Found – Possible Mobile Home Tax Address: 9845 Fish Creek Rd Glen Easton, WV 26039</p>	<p>Residence (#2) TM 13 Pcl. 7 Mary Virginia Pethtel Phone: 304-684-2646, 304-845-3423 Physical Address: 9845 Fish Creek Rd Glen Easton, WV 26039 Tax Address: Same</p>	<p>Commercial/Business (#3)* TM 13 Pcl. 5 XcL Midstream Operating, LLC Phone: 1-888-751-0434 Physical Address: 9269 Fish Creek Rd. Glen Easton, WV 26039 Tax Address: 1320 S University DR STE 500 Fort Worth, TX 76107 *Physical address appears to be related to Oil & Gas Well Pad.</p>
<p>Residence (#4) TM 13 Pcl. 5 XcL Midstream Operating, LLC Phone: 1-888-751-0434 Physical Address: None Found – Appears to be newer home Tax Address: 1320 S University DR STE 500 Fort Worth, TX 76107</p>	<p>Residence (#5) TM 13 Pcl. 5 XcL Midstream Operating, LLC Phone: 1-888-751-0434 Physical Address: 9201 Fish Creek Rd. Glen Easton, WV 26039 Tax Address: 1320 S University DR STE 500 Fort Worth, TX 76107</p>	<p>(#6) Water Well Only (No Residence) Joseph L. Blake & Michael A. Walker 1207 Roberts Ridge Rd. Moundsville, WV 26041</p>

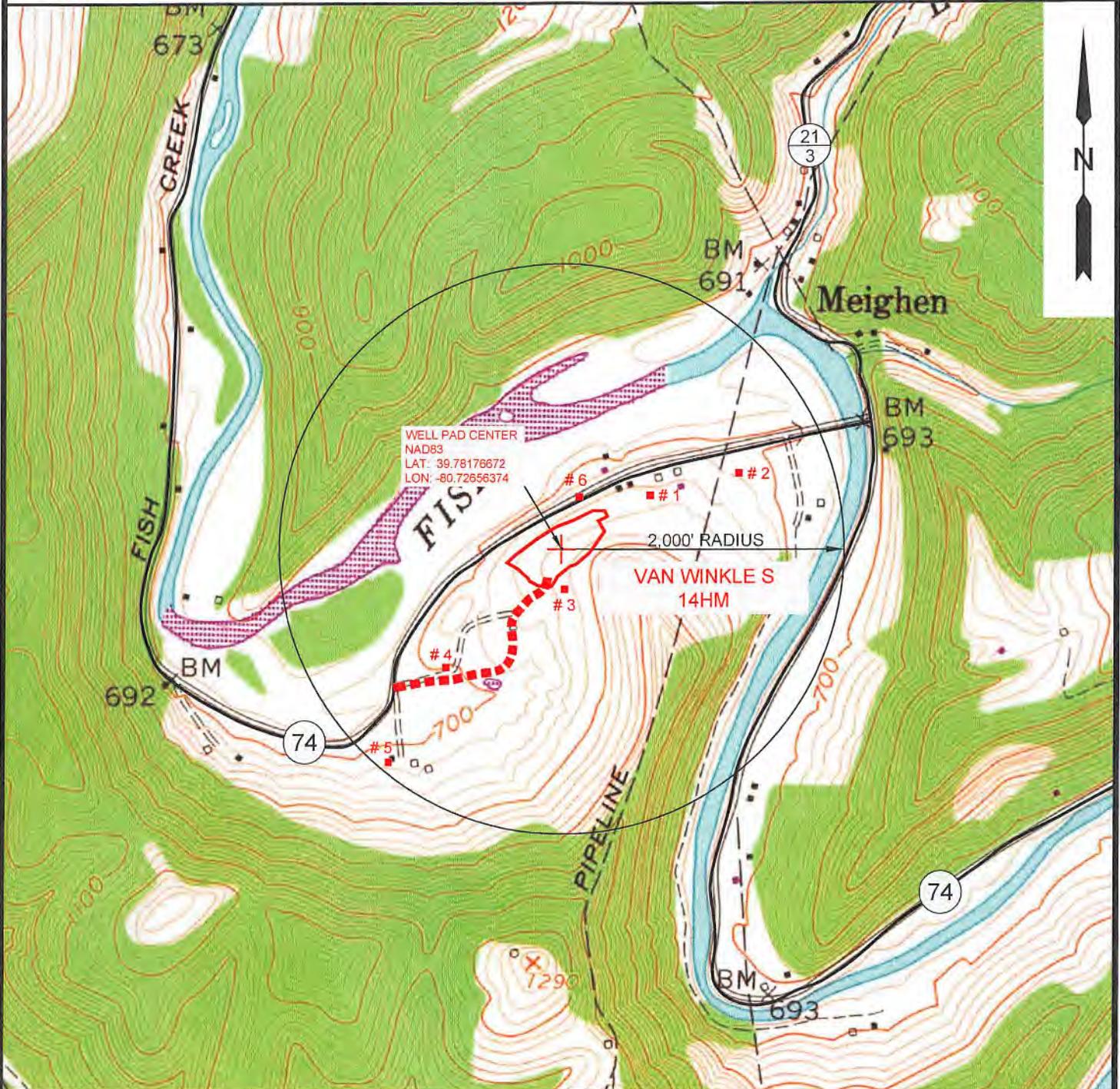
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PROPOSED VAN WINKLE S - 14HM



NOTE: THERE APPEARS TO BE SIX (6) POSSIBLE WATER SOURCES WITHIN 2,000'. NUMBER 6 IS A WATER WELL ONLY (NO RESIDENCE).



12 Vanhorn Drive | P.O. Box 150 | Glenville, WV 26351 | 304.462.5634
 1412 Kanawha Boulevard, East | Charleston, WV 25301 | 304.346.3952
 254 East Beckley Bypass | Beckley, WV 25801 | 304.255.5296
 slswv.com

TOPO SECTION:		OPERATOR:	
GLEN EASTON 7.5'		PREPARED FOR:	
COUNTY	DISTRICT	TUG HILL OPERATING, LLC	
MARSHALL	MEADE	380 SOUTHPOINTE BLVD	
		SUITE 200	
		CANONSBURG, PA 15317	
DRAWN BY	JOB NO.	DATE	SCALE
K.G.M.	8952	12/24/2020	1" = 1000'



TUG HILL
OPERATING

03/12/2021

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: 12/11/2020 **Date of Planned Entry:** 12/18/2020

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: XcL Midstream Operating, LLC (Well Pad & Access Road)
 Address: 380 Southpointe Boulevard, Plaza II, Suite 215
Canonsburg, PA 15317

Name: Frank E. & Mary Virginia Pethtel, Life Estate (Well Pad)
 Address: 9845 Fish Creek Road
Glen Easton, WV 26039

Name: Regina M. & Aaron D. Murray, Remainderman
 Address: 5 Mound Manor
St. Marys, WV 26170

COAL OWNER OR LESSEE

Name: CNX Land, LLC
 Address: 1000 Consol Energy Drive
Canonsburg, PA 15317

MINERAL OWNER(s)

Name: Frank E. & Mary Virginia Pethtel, Life Estate
 Address: 9845 Fish Creek Road
Glen Easton, WV 26039 **See attached list
 *please attach additional forms if necessary

Notice is hereby given:

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

State: <u>West Virginia</u>	Approx. Latitude & Longitude: <u>39.78176850; -80.72661368</u>
County: <u>Marshall</u>	Public Road Access: <u>County Route 74</u>
District: <u>Meade</u>	Watershed: <u>Middle Fish Creek</u>
Quadrangle: <u>Glen Easton 7.5'</u>	Generally used farm name: <u>XcL Midstream Operating, LLC</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>amorris@tug-hill-op.com</u>	Facsimile: <u>724-338-2020</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.

03/12/2021

WW-6A3 Notice of Entry for Plat Survey
Additional Parties to Notice
Van Winkle Wells

4705102368

Additional Mineral Owner:
Dennis W. Hunter
3322 Rainbow Lane
North Ft. Myers, FL 33903

03/12/2021

4705102368



**Additional Surface Owner – Van Winkle Wells
WW-6A5**

Regina M. & Aaron D. Murray
5 Mound Manor
St. Marys, WV 26170

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JAN 25 2021

WV Department of
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03/12/2021



WEST VIRGINIA DEPARTMENT OF TRANSPORTATION

Division of Highways

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

Byrd E. White, III
Secretary of Transportation/
Commissioner of Highways

January 20, 2021

Jimmy Wriston, P. E.
Deputy Secretary/
Deputy Commissioner

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 Hunter-Pethtel Pad, Marshall County
Van Winkle S-14HM Well Site

Dear Mr. Martin,

This well site will be accessed from a DOH permit #06-2009-0275 which has been transferred to Tug Hill Operating for access to the State Road for a well site located off Marshall County Route 74 SLS.

This operator is in compliance with §22-6A-20 of the WV Code. Operator has signed a DISTRICT WIDE OIL AND GAS ROAD MAINTENANCE BONDING AGREEMENT and provided the required Bond. This operator is currently in compliance with the DOH OIL AND GAS POLICY dated October 1, 2018. This letter is valid for permitting purposes for one year from this letter's date.

Very Truly Yours,

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

Cc: Amy Morris
Tug Hill Operating
CH, OM, D-6
File

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JAN 25 2021
WV Department of
Environmental Protection



TUG HILL

4705102368

PLANNED ADDITIVES TO BE USED IN FRACTURING OR STIMULATION

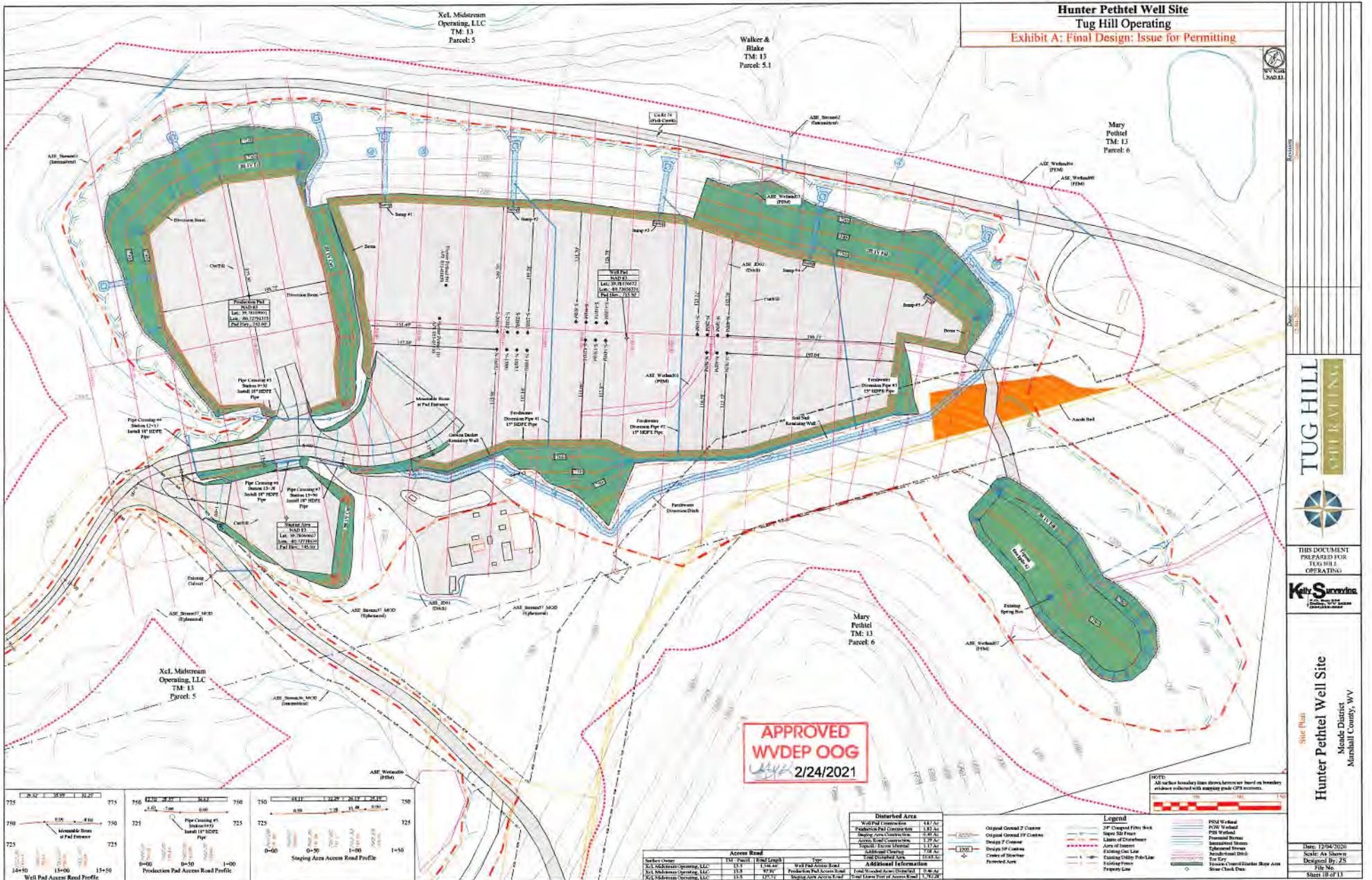
Van Winkle Wells

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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Hunter Pethel Well Site
Tug Hill Operating

Exhibit A: Final Design: Issue for Permitting



TUG HILL OPERATING



THIS DOCUMENT PREPARED FOR TUG HILL OPERATING



Hunter Pethel Well Site
Meigs District
Marshall County, WV

APPROVED WVDEP OOG
2/24/2021

NOTE: All surface boundary lines shown hereafter are based on boundary evidence reduced with survey grade CORS corrections.

Distributed Area	
Well Pad Construction	137.50
Production Pad Construction	133.50
Access Road Construction	27.50
Utility Line Construction	13.50
Site Remediation	13.50
Other Disturbed Area	17.50
Total Disturbed Area	233.50

Access Road	
Surface Owner	13.50
Well Pad Access Road	13.50
Production Pad Access Road	13.50
Staging Area Access Road	13.50
Total Linear Feet of Access Road	54.00

Legend	
Original Ground 2" Contour	2" Contour Filter Box
Original Ground 10" Contour	10" Filter Box
Design 2" Contour	Line of Containment
Design 10" Contour	Line of Containment
Center of Streamer	Existing Gas Line
Proposed Area	Existing Utility Pole-Line
	Existing Power
	Property Line

Legend	
POU Wellpad	POU Wellpad
PSB Wellpad	PSB Wellpad
Production Pad	Production Pad
Production Access	Production Access

