



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 16, 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-11HM
47-051-02360-00-00

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-11HM
Farm Name: XCL MIDSTREAM OPERATING, LLC
U.S. WELL NUMBER: 47-051-02360-00-00
Horizontal 6A New Drill
Date Issued: 3/16/2021

PERMIT CONDITIONS

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

CONDITIONS

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

API Number: 4705102360

PERMIT CONDITIONS

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

03/19/2021

WW-6B
(04/15)

4705102360
API NO. 47-051 -
OPERATOR WELL NO. Van Winkle S-11HM
Well Pad Name: Hunter Pethel

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-11HM Well Pad Name: Hunter Pethel

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

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Marcellus is the target formation at a depth of 6132' - 6182', thickness of 50' and anticipated pressure of approx. 3800 psi.

8) Proposed Total Vertical Depth: 6,282'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 21,426'

11) Proposed Horizontal Leg Length: 14,734.21'

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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WW-6B
(04/15)

4705102360
 API NO. 47-051
 OPERATOR WELL NO. Van Winkle S-11HM
 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#	2,233'	2,233'	725ft^3(CTS)
Production	5 1/2"	NEW	P110	20#	21,426'	21,426'	5415ft^3(CTS)
Tubing	2 3/8"	NEW	N80	4.7#		6,352'	
Liners							

Bay Strip
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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WW-6B
(10/14)

4705102360
API NO. 47-051 -
OPERATOR WELL NO. Van Winkle S-11HM
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 37,000,000 lb proppant and 665,000 bbl of water. Max rate = 80 bpm; max psi = 9,000#.

Boyd Hildebr 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.

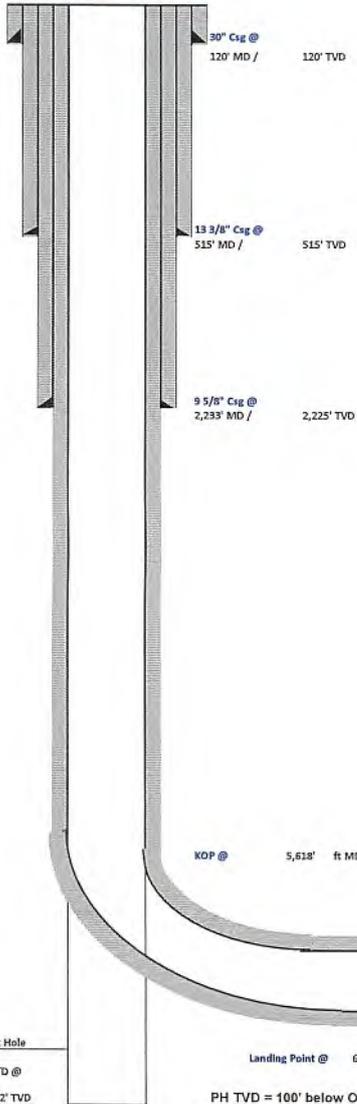


WELL NAME: Van Winkle S-11HM
 STATE: WV COUNTY: Marshall
 DISTRICT: Meade
 DF Elev: 754' GL Elev: 754'
 TD: 21,426'
 TH Latitude: 39.781762
 TH Longitude: -80.726671
 BH Latitude: 39.744356
 BH Longitude: -80.704103

FORMATION TOPS	
Formation	Depth TVD
Deepest Fresh Water	415
Sewickley Coal	314
Pittsburgh Coal	409
Big Lime	1619
Weir	1911
Berea	2110
Gordon	2380
Rhinestreet	5497
Genesee/Burkett	6002
Tully	6029
Hamilton	6064
Marcellus	6132
Landing Depth	6167
Onondaga	6182
Pilot Hole Depth	6282

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	8W	Surface
Surface	17.5	13 3/8	515'	515'	54.5	J55	Surface
Intermediate 1	12 1/4	9 5/8	2,233'	2,225'	36	J55	Surface
Production	8 7/8 x 8 3/4	5 1/2	21,426'	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	759	A	15	Air	1 Centralizer every other jt
Production	5,021	A	14.5	Air / SOBMM	1 every other joint in lateral; 1 per joint in curve; 1 every other jt to sfc



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1/21/21

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Tug Hill Operating, LLC Casing and Cement Program

Van Winkle S-11HM

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"	2,233'	CTS
Production	5 1/2"	CYHP110	8 7/8 x 8 3/4"	21,426'	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

03/19/2021

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

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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

Permit well - Van Winkle S-11HM

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.
4705130404	Wilhelm & Jackson	2955' 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 10/6/1959.
4705130407	Wilhelm & Jackson	2985' 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 10/30/1959.
4705170197	Hope Natural Gas Company	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well.	State records are incomplete.
4705130441	Manufacturers Light & Heat Co.	2980' 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 5/14/1962.
4705100827	Perkins Oil and Gas, Inc.	Unknown	Unknown	Unknown	Unknown but unlikely. The well likely represents an old shallow well that is too shallow to be effected by fracturing in the planned Marcellus well.	State records are incomplete.
4705101218	CNX Gas Co. LLC (North)	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.
4705170158	The Wheeling Natural Gas Co.	2986' TVD	Unknown	Unknown	No, the well is not deep enough to be within the expected fracture propagation from a Marcellus stimulation.	State records are incomplete.

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Well Reassignment Information: Reassigned From

OLD_COUNTY	OLD_PERMIT	NEW_COUNTY	NEW_PERMIT
51	70770	51	827

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LONG_DD	UTME	UTMN
4705100827	Marshall	827	Meade	Glen Easton	Cameron	39.754478	-80.711337	524728.3	4400547.1

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SPUD_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
4705100827	++			unknown	Prpty Map	Joseph Shuster	1	1278			Perkins Oil and Gas, Inc.			
4705100827	++			Original Loc	Completed	Joseph Shuster		1278			unknown			

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	TL_BEF	P_AFT	TL_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705100827	++		++	1380	Topo Estimation			unclassified	unclassified	Gas	unknown	unknown																	
4705100827	++		++					unclassified	unclassified	not available	unknown	unknown																	

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
4705100827	Perkins Oil and Gas, Inc.	1999	317	0	0	0	0	0	0	0	0	65	122	110	
4705100827	Perkins Oil and Gas, Inc.	2001	817	66	42	44	69	83	82	80	72	70	68	83	58
4705100827	Perkins Oil and Gas, Inc.	2002	820	88	59	74	51	40	59	60	18	15	20	42	98
4705100827	Perkins Oil and Gas, Inc.	2003	559	77	3	68	51	61	82	34	28	47	70	0	38
4705100827	Perkins Oil and Gas, Inc.	2004	788	73	56	98	81	90	50	59	28	13	64	96	80
4705100827	Perkins Oil and Gas, Inc.	2005	938	25	59	95	89	85	87	70	92	84	82	93	77
4705100827	Perkins Oil and Gas, Inc.	2006	815	22	54	69	63	85	80	82	87	81	70	63	59
4705100827	Perkins Oil and Gas, Inc.	2007	435	28	10	36	38	72	48	32	41	30	36	48	18
4705100827	Perkins Oil and Gas, Inc.	2008	803	45	39	44	34	56	37	62	65	49	71	52	48
4705100827	Perkins Oil and Gas, Inc.	2009	1,005	88	63	77	69	65	97	99	81	94	91	79	
4705100827	Perkins Oil and Gas, Inc.	2010	829	61	89	58	78	61	65	70	68	62	100	81	58
4705100827	Perkins Oil and Gas, Inc.	2011	1,043	73	72	96	90	105	94	82	74	81	87	79	110
4705100827	Perkins Oil and Gas, Inc.	2012	1,295	93	106	103	186	92	100	88	75	109	119	109	105
4705100827	Perkins Oil and Gas, Inc.	2013	1,196	111	88	86	93	102	92	79	115	108	122	112	108
4705100827	Perkins Oil and Gas, Inc.	2014	1,229	90	94	74	111	116	114	112	98	106	106	101	108
4705100827	Perkins Oil and Gas, Inc.	2015	1,199	125	95	39	81	73	63	117	154	102	119	116	115
4705100827	Perkins Oil and Gas, Inc.	2016	1,231	93	92	102	95	113	84	100	99	108	115	112	116
4705100827	Perkins Oil and Gas, Inc.	2017	2,130	214	102	168	188	174	170	226	188	206	216	210	92
4705100827	Perkins Oil and Gas, Inc.	2018	1,028	27	53	79	77	89	95	105	101	105	88	102	105
4705100827	Perkins Oil and Gas, Inc.	2019	965	0	42	101	95	99	105	97	102	90	92	63	99

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
4705100827	Perkins Oil and Gas, Inc.	1999	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2001	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2002	8	0	8	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2003	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2004	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2005	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2006	6	0	6	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2007	3	0	0	0	0	0	0	0	0	0	0	0	3
4705100827	Perkins Oil and Gas, Inc.	2008	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2009	6	0	0	0	0	0	0	0	6	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2010	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2011	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2012	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2013	5	0	0	0	0	0	0	5	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2014	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2015	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2016	7		7										
4705100827	Perkins Oil and Gas, Inc.	2017	0												
4705100827	Perkins Oil and Gas, Inc.	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2019	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
4705100827	Perkins Oil and Gas, Inc.	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2014	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2015	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2016	0												
4705100827	Perkins Oil and Gas, Inc.	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2019	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
4705100827	Perkins Oil and Gas, Inc.	2018	0												
4705100827	Perkins Oil and Gas, Inc.	2018	0	0	0	0	0	0	0	0	0	0	0	0	0
4705100827	Perkins Oil and Gas, Inc.	2019	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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4705102360

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTRN
4705101218	Marshall	1218	Meadie	Wileyville	Linton	39.747615	-80.708543	524870.1	4395786.1

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
4705101218	---	---	Cancelled	James Frohnappel		MC42A				CNX Gas Co. LLC (North)		854	Pittsburgh coal

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	TL_BEF	P_AFT	TL_AFT	BH_P_BEF	BH_P_AFT	G_MSRO_BY
4705101218	---	---	1187	Ground Level																									

Comment: --- Multiple dog legs

There is no Pay data for this well

There is no Production Gas data for this well

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

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

There is no Production Water data for this well

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

Table with columns: API, COUNTY, PERMIT, TAX_DISTRICT, QUAD_76, QUAD_16, LAT_DD, LON_DD, UTM_E, UTM_N. Row 1: 4705101330, Marshall, 1330, Meade, Glen Easton, Cameron, 39.781578, -80.728931, 523383.2, 4493550.8

Bottom Hole Location Information:

Table with columns: API, EP_FLAG, UTM_E, UTM_N, LON_DD, LAT_DD. Row 1: 4705101330, 1, As Proposed, 523186.9, 4402272.8, -80.729602, 39.770071

Owner Information:

Table with columns: API, CMP_DT, SUFFIX, STATUS, SURFACE_OWNER, WELL_NUM, CO_NUM, LEASE, LEASE_NUM, MINERAL_OWN, OPERATOR, AT_COMPLETION, PROP_VO, PROP_TRGT_FM, TFM_EST_PR. Row 1: 4705101330, 8/19/2010, Dvld Orgnl 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, 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, T_BEF, P_AFT, TLAFT, 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, and Gas production data for various wells and sections.

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 Stone Energy Corporation and EQT Production Company 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 Stone Energy Corporation and EQT Production Company 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 Stone Energy Corporation and EQT Production Company 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 EQT Production Company from 2016 to 2019.

Stratigraphy Information:

Table with columns: API, SUFFIX, FM, FM_QUALITY, DEPTH_TOP, DEPTH_QUALITY, THICKNESS, THICKNESS_QUALITY, ELEV, DATUM. Rows list stratigraphic units like Pittsburgh coal, Little Lime, Big Injun (PriceSeq), Weir, Berna Ss, Gordon Stray, Ribey, Benson, Java: Pipe Creek, Alexander, Rhineswell Sh, Cashsqua Sh Mbr, Middlesex Sh, West River Sh Mbr, Geneva Sh Mbr, Tully Ls, Hamilton Grp, Marcellus Fm, Onondaga Ls.

Wireline (E-Log) Information:

Table with columns: API, LOG_TOP, LOG_BOT, DEEPEST_FM, LOGS_AVAIL, SCAN, DIGITIZED, GR_TOP, GR_BOT, D_TOP, D_BOT, N_TOP, N_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, 4882, 6151, G, Y, N, N, Y, N, 4880, 10968

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.

Table with columns: FILENAME. Row 1: 4705101330oo_Sm_md_hvd.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 Po, etc.)
g gamma ray
i induction (includes dual induction, medium induction, deep induction, etc.)
l laboratory
m dipmeter
n neutron (includes neutron porosity, sidewall neutron-SWYN, 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 perforator

*other logs may include, but are not limited to, such curves as audio, bit size, CCL-casing collar locator, continuous meter, directional survey, gas deflector, 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_16	LAT_DD	LONG_DD	UTME	UTMN
4705101846	Marshall	1846	Meade	Gen Easton	Cameron	39.781827	-80.728602	523411.3	4403578.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LONG_DD	LAT_DD
4705101846	1	As Proposed	521873.8	4404378.5	-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 Pettel		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_MSBD_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	523570	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	P_AFT	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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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705101859	Marshall	1859	Meado	Glen Easton	Cameron	39.78156	-80.728975	523368	4403548.6

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LONG_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	--		David Orqnl Loc	Canceled	Dennis W Hunter	8H	Hunter Pettel		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	T1_BEF	P_AFT	T1_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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API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705101860	Marshall	1860	Meade	Glen Easton	Cameron	39.761673	-80.726548	523416	4403561.3

Bottom Hole Location Information:

API	EP_FLAG	UTME	UTMN	LONG_DD	LAT_DD
4705101860	1	As Proposed	S22074.3	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	---		Cancelled	Dennis W Hunter	10H		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
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

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LONG_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	LONG_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	---	Drill Ornd Loc	Cancelled	Dennis W Hunter	51		Hunter/Pebblet		Dennis W Hunter et al	Stone Energy Corporation	6250	Marcellus Fin	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_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TL_BEF	P_AFT	TL_AFT	BH_P_BEF	BH_P_AFT	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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4705102360

Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LON_DD	UTME	UTMN
4705130404	Marshall	30404	Meade	Glen Easton	Cameron	39.775069	-89.727874	523304.6	4402827.9

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
4705130404	--	--	Original Loc Completed	John R Kelsey			UDev undr BerLoHURN	736		1938 OP=AM Snider also Wilhelm & Jackson			

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	TL_BEF	P_AFT	TL_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705130404	--	--	1277 Ground Level	Cameron-Gamer	UDev undr BerLoHURN	Gordon	Development Well	unclassified	Gas	Catdle Tool	unknown	2955			2955		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
4705130404	--	Water	Fresh Water	Vertical			120	undetermined unit					
4705130404	--	Water	Salt Water	Vertical	1700	Salt Sands (undiff)	1790	Salt Sands (undiff)					
4705130404	--	Pay	Gas	Vertical			2902	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
4705130404	Original Loc	unidentified coal	Well Record	550	Reasonable	5	Reasonable	1277 Ground Level
4705130404	Original Loc	Sewickley coal	Well Record	805	Reasonable	5	Reasonable	1277 Ground Level
4705130404	Original Loc	Pittsburgh coal	Well Record	900	Reasonable	5	Reasonable	1277 Ground Level
4705130404	Original Loc	Bufflo Sal/1st Cow/ Pn	Well Record	1220	Reasonable	25	Reasonable	1277 Ground Level
4705130404	Original Loc	Mahontg Sal/Big Dunk	Well Record	1315	Reasonable	35	Reasonable	1277 Ground Level
4705130404	Original Loc	Salt Sands (undiff)	Well Record	1635	Reasonable	205	Reasonable	1277 Ground Level
4705130404	Original Loc	Maxton	Well Record	1905	Reasonable	15	Reasonable	1277 Ground Level
4705130404	Original Loc	Big Lime	Well Record	1980	Reasonable	45	Reasonable	1277 Ground Level
4705130404	Original Loc	Big Injan (undiff)	Well Record	2025	Reasonable	280	Reasonable	1277 Ground Level
4705130404	Original Loc	Gordon Stray	Well Record	2877	Reasonable	5	Reasonable	1277 Ground Level
4705130404	Original Loc	Gordon	Well Record	2900	Reasonable	10	Reasonable	1277 Ground Level

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

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705130404	10/6/1959	0

There is no Sample data for this well

4705102360

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_76	QUAD_16	LAT_DD	LONG_DD	UTME	UTRN
4705130407	Marshall	30407	Meade	Glen Easton	Cameron	39.770479	-80.725103	523543.6	4402319.2

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
4705130407	9/28/1904	Original Loc	Completed	Washington Kelley			515-HING		1967	OP=Al Snider also Wilhelm & Jackson			

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	TL_BEF	P_AFT	TL_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY	
4705130407	9/28/1904	-/-	1214 Ground Level	Cameron-Garner	UDev undf Ben/LaHURN	Gordon	Development Well	unclassified	Gas	Cable Tool	unknown	2985		2985		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
4705130407	9/28/1904	Pay	Gas	Vertical			2938	Gordon	0	0			
4705130407	9/28/1904	Pay	Gas	Vertical			2950	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
4705130407	Original Loc	Pittsburgh coal	Well Record	835	Reasonable	5	Reasonable	1214 Ground Level
4705130407	Original Loc	Mahoning Sandstone	Well Record	1225	Reasonable	35	Reasonable	1214 Ground Level
4705130407	Original Loc	Salt Sands (undist)	Well Record	1635	Reasonable	140	Reasonable	1214 Ground Level
4705130407	Original Loc	Big Injun (undist)	Well Record	1960	Reasonable	250	Reasonable	1214 Ground Level
4705130407	Original Loc	Gordon Stray	Well Record	2790	Reasonable	5	Reasonable	1214 Ground Level
4705130407	Original Loc	Gordon	Well Record	2837	Reasonable	73	Reasonable	1214 Ground Level

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

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705130407	10/30/1959	0

There is no Sample data for this well

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Location Information: [View Map](#)

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_16	LAT_DD	LON_DD	UTME	UTRN
4705130441	Marshall	30441	Meade	Gen Easton	Cameron	39.766273	-80.722488	523770.6	4401853.2

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
4705130441	8/7/1904	Original Loc	Completed	Joseph Shuffler	3	1279		2882	unknown	Manufacturers Light & Heat Co.			
4705130441	6/9/1914	Drilled Deeper	Completed	Joseph Shuffler	3	L-1279		2882	unknown	Manufacturers Light & Heat Co.			
4705130441	4/28/1915	Drilled Deeper	Completed	Joseph Shuffler	3	L-1279		2882	unknown	Manufacturers Light & Heat Co.			

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	TL_BEF	P_AFT	TL_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705130441	8/7/1904	8/19/1904	1308 Ground Level	Cameron-Garner	UDev undrf Ber/LoHURN	Gordon	Development Well	unclassified	Gas	Cable Tool	unknown	2930		2930		0	0	0	0			460	0	0	0	0		
4705130441	6/9/1914	-/-	1308 Ground Level	Cameron-Garner	UDev undrf Ber/LoHURN	UDev undrf Ber/LoHURN	unclassified	unclassified	Gas	Cable Tool	unknown	2941		11		0	0	0	0			0	0	0	0			
4705130441	4/28/1915	-/-	1308 Ground Level	Cameron-Garner	UDev undrf Ber/LoHURN	UDev undrf Ber/LoHURN	unclassified	unclassified	Gas	Cable Tool	unknown	2980		39		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
4705130441	8/7/1904	Pay	Gas	Vertical			2920	Gordon	0	0			
4705130441	6/9/1914	Pay	Gas	Vertical			2941	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
4705130441	Original Loc	unidentified coal	Well Record	530	Reasonable			1308 Ground Level
4705130441	Original Loc	Sewickley coal	Well Record	830	Reasonable	7	Reasonable	1308 Ground Level
4705130441	Original Loc	Pittsburgh coal	Well Record	920	Reasonable	5	Reasonable	1308 Ground Level
4705130441	Original Loc	Bufflo Ss/1st Cow Rn	Well Record	1250	Reasonable	20	Reasonable	1308 Ground Level
4705130441	Original Loc	Mahonig Ss/Big Dunk	Well Record	1420	Reasonable	15	Reasonable	1308 Ground Level
4705130441	Original Loc	1st Salt Sand	Well Record	1650	Reasonable	40	Reasonable	1308 Ground Level
4705130441	Original Loc	2nd Salt Sand	Well Record	1690	Reasonable	60	Reasonable	1308 Ground Level
4705130441	Original Loc	Big Lime	Well Record	1960	Reasonable	45	Reasonable	1308 Ground Level
4705130441	Original Loc	Big Injun (undiff)	Well Record	2005	Reasonable	270	Reasonable	1308 Ground Level
4705130441	Original Loc	Berea Ss	Well Record	2615	Reasonable	15	Reasonable	1308 Ground Level
4705130441	Original Loc	Gordon	Well Record	2910	Reasonable	10	Reasonable	1308 Ground Level

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

Plugging Information:

API	PLG_DT	DEPTH_PBT
4705130441	5/14/1962	0

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	LONG_DD	UTME	UTMN
4705170158	Marshall	70158	Meade	Wileyville	Littleton	39 744568	-80 703479	525405	4399449 5

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
4705170158	--		Original Loc Completed	Fred Weyman	2					Wheeling Natural Gas Co., The			

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
4705170158	--	--	1295 Barometer				unclassified	unclassified	not available	unknown	unknown	2966																

There is no Pay data for this well

There is no Production Gas data for this well

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

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

There is no Production Water data for this well

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
4705170197	Marshall	70197	Meade	Olen Easton	Cameron	39.774054	-80.727488	523337.2	4402715.4

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
4705170197	--	--	Original Loc. Completed	J R Kelley		1				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	TVD	TMD	NEW_FTG	KOD	G_BEF	G_AFT	O_BEF	O_AFT	NGL_BEF	NGL_AFT	P_BEF	TL_BEF	P_AFT	TL_AFT	BH_P_BEF	BH_P_AFT	G_MSRD_BY
4705170197	--	--						unclassified	unclassified	not available	unknown	unknown																	

There is no Pay data for this well

There is no Production Gas data for this well

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

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

There is no Production Water data for this well

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

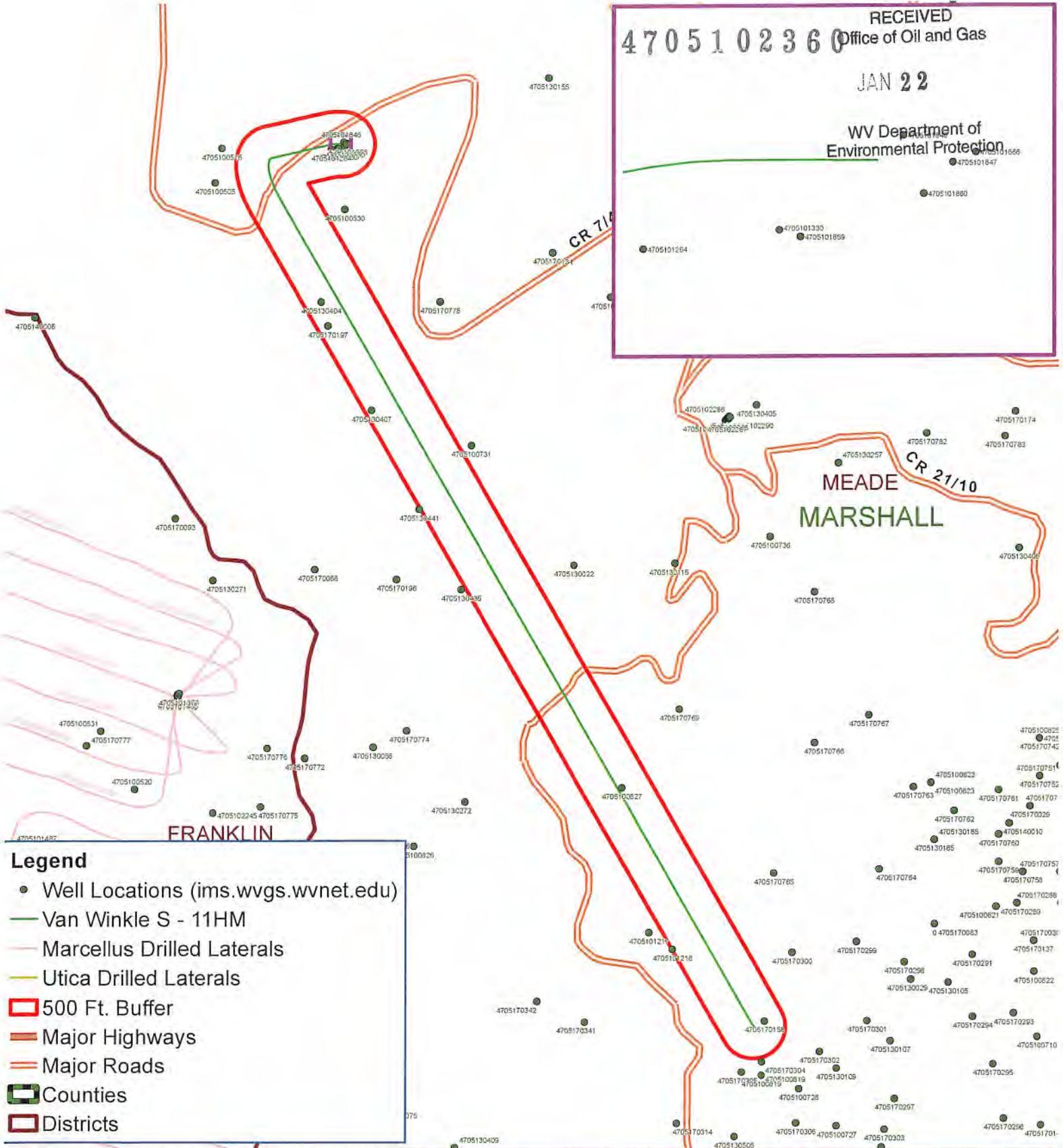
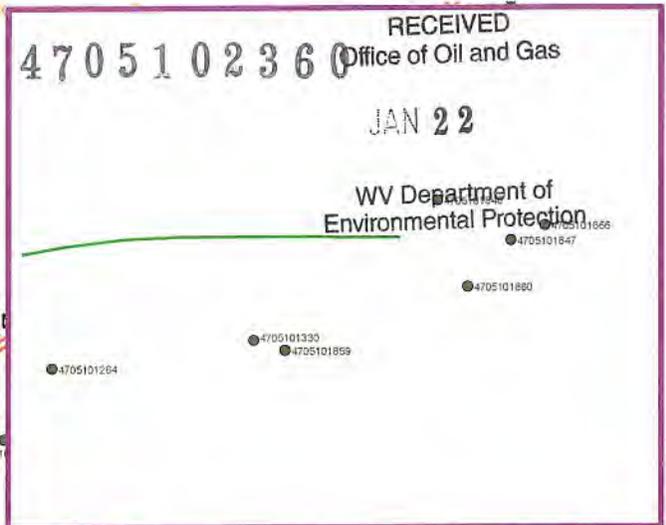
There is no Sample data for this well

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- Legend**
- Well Locations (ims.wvgs.wvnet.edu)
 - Van Winkle S - 11HM
 - Marcellus Drilled Laterals
 - Utica Drilled Laterals
 - ▭ 500 Ft. Buffer
 - Major Highways
 - Major Roads
 - ▭ Counties
 - ▭ Districts



Van Winkle S - 11HM Meade District Marshall County, WV



Map Created: December 2, 2020

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



Well: Van Winkle S-11 HM (slot L)
 Site: Van Winkle
 Project: Marshall County, West Virginia
 Design: rev1
 Rig:

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
1	0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.000	0.00	
2	1500.00	0.00	0.000	1500.00	0.00	0.00	0.00	0.000	0.00	KOP Begin 2°/100' build
3	2300.00	16.00	270.000	2289.64	0.00	-110.98	2.00	270.000	-47.16	Begin 8°/100' build/turn
4	2494.99	17.63	257.718	2476.35	-6.28	-166.72	2.00	-71.322	-65.17	Begin 17.63° tangent
5	5618.04	17.63	257.718	5452.72	-207.50	-1090.95	0.00	0.000	-275.81	Begin 8°/100' build/turn
6	6283.07	50.00	164.356	6025.08	-495.18	-1123.00	8.00	-107.252	-29.02	Begin 10°/100' build/turn
7	6694.22	89.00	150.036	6166.96	-839.82	-971.31	10.00	-22.091	347.41	Begin 89.00° lateral
8	21425.76	89.00	150.036	6425.00-13600.39	6385.28	0.00	0.000	5024.72		PBHL/TD 21425.76 MD/6425.00 TVD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Van Winkle S-11HM LP r1	6167.00	-839.75	-981.901444	6543.15	1716224.00	39.77946400	-80.73017500
- plan misses target center by 9.15ft at 6688.99ft MD (6166.85 TVD, -835.28 N, -973.92 E)							
Van Winkle S-11HM PBHL r1	6425.00	-13600.39	6385.281443	3782.54	1723591.16	39.74435600	-80.70410300
- plan hits target center							

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

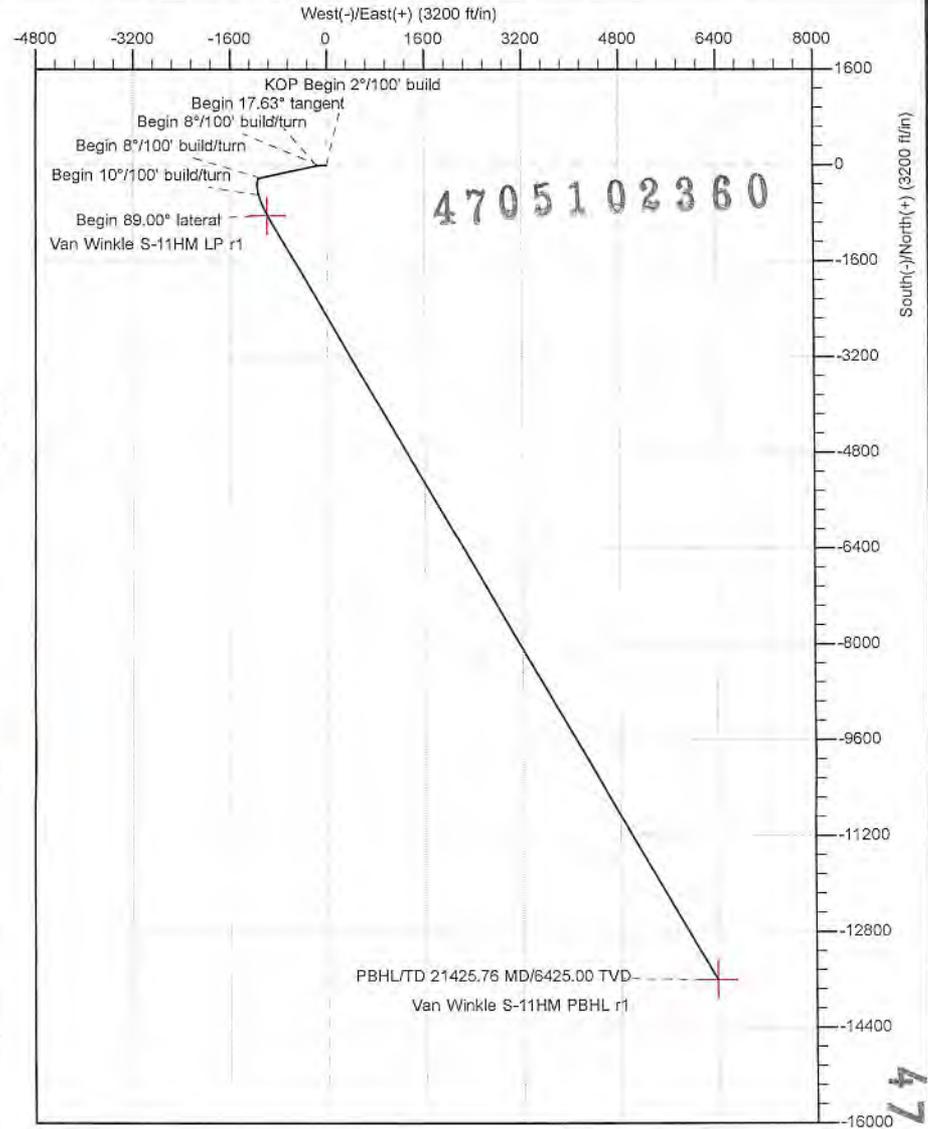
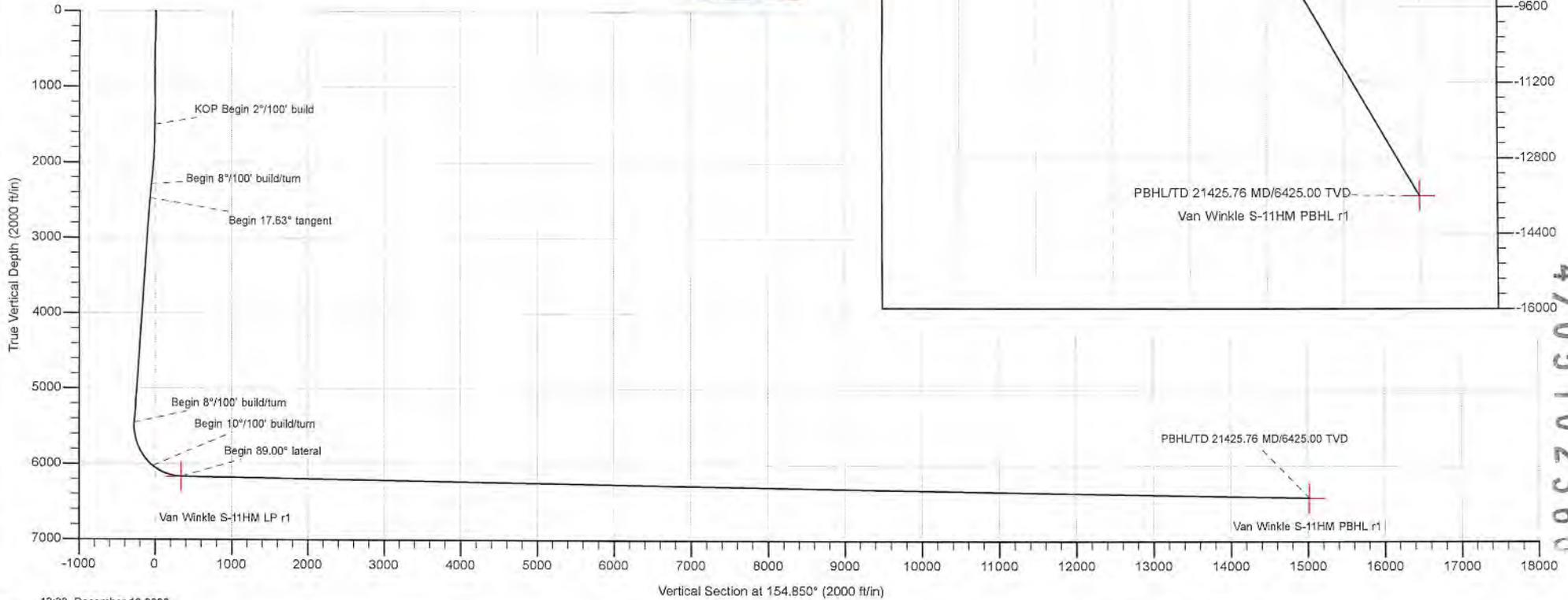
Northing	Easting	Latitude	Longitude
14447382.90	1717205.89	39.78176200	-80.72667100

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.821°



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

Magnetic Field
 Strength: 51812.2snT
 Dip Angle: 66.60°
 Date: 11/13/2020
 Model: IGRF2020



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-11 HM (slot L)
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-11 HM (slot L)	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-11 HM (slot L)					
Well Position	+N/-S	13.41 ft	Northing:	14,447,382.90 usft	Latitude:	39.78176200
	+E/-W	17.45 ft	Easting:	1,717,205.89 usft	Longitude:	-80.72667100
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	51,812.24031673

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	154.850

Plan Survey Tool Program	Date	11/17/2020		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,425.76	rev1 (Original Hole)	NS-GYRO-MS North sensing gyrocompassing

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	
1,500.00	0.00	0.000	1,500.00	0.00	0.00	0.00	0.00	0.00	0.000	
2,300.00	16.00	270.000	2,289.64	0.00	-110.98	2.00	2.00	0.00	270.000	
2,494.99	17.63	257.718	2,476.35	-6.28	-166.72	2.00	0.84	-6.30	-71.322	
5,618.04	17.63	257.718	5,452.72	-207.50	-1,090.95	0.00	0.00	0.00	0.000	
6,283.07	50.00	164.356	6,025.08	-495.18	-1,123.00	8.00	4.87	-14.04	-107.252	
6,694.22	89.00	150.036	6,166.96	-839.82	-971.31	10.00	9.48	-3.48	-22.091	
21,425.76	89.00	150.036	6,425.00	-13,600.39	6,385.28	0.00	0.00	0.00	0.000	Van Winkle S-11HM F

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-11 HM (slot L)
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-11 HM (slot L)	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)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.000	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.000	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.000	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.000	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.000	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.000	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.000	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.000	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.000	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.000	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	0.00	0.000	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,200.00	0.00	0.000	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,300.00	0.00	0.000	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,400.00	0.00	0.000	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.000	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
KOP Begin 2°/100' build										
1,600.00	2.00	270.000	1,599.98	0.00	-1.75	-0.74	2.00	2.00	0.00	
1,700.00	4.00	270.000	1,699.84	0.00	-6.98	-2.97	2.00	2.00	0.00	
1,800.00	6.00	270.000	1,799.45	0.00	-15.69	-6.67	2.00	2.00	0.00	
1,900.00	8.00	270.000	1,898.70	0.00	-27.88	-11.85	2.00	2.00	0.00	
2,000.00	10.00	270.000	1,997.47	0.00	-43.52	-18.50	2.00	2.00	0.00	
2,100.00	12.00	270.000	2,095.62	0.00	-62.60	-26.61	2.00	2.00	0.00	
2,200.00	14.00	270.000	2,193.06	0.00	-85.10	-36.16	2.00	2.00	0.00	
2,300.00	16.00	270.000	2,289.64	0.00	-110.98	-47.16	2.00	2.00	0.00	
Begin 8°/100' build/turn										
2,400.00	16.75	263.411	2,385.60	-1.65	-139.07	-57.61	2.00	0.75	-6.59	
2,494.99	17.63	257.718	2,476.35	-6.28	-166.72	-65.17	2.00	0.93	-5.99	
Begin 17.63° tangent										
2,500.00	17.63	257.718	2,481.12	-6.61	-168.21	-65.50	0.00	0.00	0.00	
2,600.00	17.63	257.718	2,576.43	-13.05	-197.80	-72.25	0.00	0.00	0.00	
2,700.00	17.63	257.718	2,671.73	-19.49	-227.39	-78.99	0.00	0.00	0.00	
2,800.00	17.63	257.718	2,767.03	-25.94	-256.99	-85.74	0.00	0.00	0.00	
2,900.00	17.63	257.718	2,862.34	-32.38	-286.58	-92.48	0.00	0.00	0.00	
3,000.00	17.63	257.718	2,957.64	-38.82	-316.17	-99.23	0.00	0.00	0.00	
3,100.00	17.63	257.718	3,052.94	-45.26	-345.77	-105.97	0.00	0.00	0.00	
3,200.00	17.63	257.718	3,148.25	-51.71	-375.36	-112.72	0.00	0.00	0.00	
3,300.00	17.63	257.718	3,243.55	-58.15	-404.96	-119.46	0.00	0.00	0.00	
3,400.00	17.63	257.718	3,338.85	-64.59	-434.55	-126.21	0.00	0.00	0.00	
3,500.00	17.63	257.718	3,434.16	-71.04	-464.14	-132.95	0.00	0.00	0.00	
3,600.00	17.63	257.718	3,529.46	-77.48	-493.74	-139.70	0.00	0.00	0.00	
3,700.00	17.63	257.718	3,624.76	-83.92	-523.33	-146.44	0.00	0.00	0.00	
3,800.00	17.63	257.718	3,720.07	-90.36	-552.92	-153.19	0.00	0.00	0.00	
3,900.00	17.63	257.718	3,815.37	-96.81	-582.52	-159.93	0.00	0.00	0.00	
4,000.00	17.63	257.718	3,910.67	-103.25	-612.11	-166.68	0.00	0.00	0.00	
4,100.00	17.63	257.718	4,005.98	-109.69	-641.70	-173.42	0.00	0.00	0.00	
4,200.00	17.63	257.718	4,101.28	-116.14	-671.30	-180.17	0.00	0.00	0.00	
4,300.00	17.63	257.718	4,196.58	-122.58	-700.89	-186.91	0.00	0.00	0.00	
4,400.00	17.63	257.718	4,291.89	-129.02	-730.49	-193.66	0.00	0.00	0.00	
4,500.00	17.63	257.718	4,387.19	-135.46	-760.08	-200.40	0.00	0.00	0.00	
4,600.00	17.63	257.718	4,482.49	-141.91	-789.67	-207.14	0.00	0.00	0.00	
4,700.00	17.63	257.718	4,577.80	-148.35	-819.27	-213.89	0.00	0.00	0.00	
4,800.00	17.63	257.718	4,673.10	-154.79	-848.86	-220.63	0.00	0.00	0.00	



Planning Report



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-11 HM (slot L)
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-11 HM (slot L)	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)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,900.00	17.63	257.718	4,768.40	-161.24	-878.45	-227.38	0.00	0.00	0.00
5,000.00	17.63	257.718	4,863.70	-167.68	-908.05	-234.12	0.00	0.00	0.00
5,100.00	17.63	257.718	4,959.01	-174.12	-937.64	-240.87	0.00	0.00	0.00
5,200.00	17.63	257.718	5,054.31	-180.56	-967.23	-247.61	0.00	0.00	0.00
5,300.00	17.63	257.718	5,149.61	-187.01	-996.83	-254.36	0.00	0.00	0.00
5,400.00	17.63	257.718	5,244.92	-193.45	-1,026.42	-261.10	0.00	0.00	0.00
5,500.00	17.63	257.718	5,340.22	-199.89	-1,056.02	-267.85	0.00	0.00	0.00
5,600.00	17.63	257.718	5,435.52	-206.34	-1,085.61	-274.59	0.00	0.00	0.00
5,618.04	17.63	257.718	5,452.72	-207.50	-1,090.95	-275.81	0.00	0.00	0.00
Begin 8°/100' build/turn									
5,700.00	16.85	235.622	5,531.08	-216.86	-1,112.90	-276.67	8.00	-0.95	-26.96
5,800.00	19.09	210.497	5,626.34	-239.17	-1,133.20	-265.10	8.00	2.24	-25.13
5,900.00	23.85	192.775	5,719.47	-273.03	-1,145.99	-239.88	8.00	4.77	-17.72
6,000.00	29.96	181.279	5,808.66	-317.79	-1,151.03	-201.51	8.00	6.11	-11.50
6,100.00	36.75	173.537	5,892.18	-372.57	-1,148.21	-150.72	8.00	6.79	-7.74
6,200.00	43.90	167.969	5,968.39	-436.31	-1,137.60	-88.52	8.00	7.15	-5.57
6,283.07	50.00	164.356	6,025.08	-495.18	-1,123.00	-29.02	8.00	7.34	-4.35
Begin 10°/100' build/turn									
6,300.00	51.57	163.543	6,035.78	-507.78	-1,119.37	-16.07	10.00	9.28	-4.80
6,400.00	60.95	159.354	6,091.28	-586.45	-1,092.80	66.43	10.00	9.38	-4.19
6,500.00	70.43	155.872	6,132.41	-670.56	-1,058.04	157.34	10.00	9.49	-3.48
6,600.00	79.98	152.782	6,157.92	-757.57	-1,016.15	253.90	10.00	9.54	-3.09
6,694.22	89.00	150.036	6,166.96	-839.82	-971.31	347.41	10.00	9.57	-2.91
Begin 89.00° lateral									
6,700.00	89.00	150.036	6,167.07	-844.82	-968.42	353.17	0.00	0.00	0.00
6,800.00	89.00	150.036	6,168.82	-931.44	-918.49	452.80	0.00	0.00	0.00
6,900.00	89.00	150.036	6,170.57	-1,018.06	-868.55	552.43	0.00	0.00	0.00
7,000.00	89.00	150.036	6,172.32	-1,104.68	-818.61	652.06	0.00	0.00	0.00
7,100.00	89.00	150.036	6,174.07	-1,191.30	-768.67	751.69	0.00	0.00	0.00
7,200.00	89.00	150.036	6,175.82	-1,277.92	-718.73	851.33	0.00	0.00	0.00
7,300.00	89.00	150.036	6,177.57	-1,364.54	-668.80	950.96	0.00	0.00	0.00
7,400.00	89.00	150.036	6,179.33	-1,451.17	-618.86	1,050.59	0.00	0.00	0.00
7,500.00	89.00	150.036	6,181.08	-1,537.79	-568.92	1,150.22	0.00	0.00	0.00
7,600.00	89.00	150.036	6,182.83	-1,624.41	-518.98	1,249.85	0.00	0.00	0.00
7,700.00	89.00	150.036	6,184.58	-1,711.03	-469.05	1,349.49	0.00	0.00	0.00
7,800.00	89.00	150.036	6,186.33	-1,797.65	-419.11	1,449.12	0.00	0.00	0.00
7,900.00	89.00	150.036	6,188.08	-1,884.27	-369.17	1,548.75	0.00	0.00	0.00
8,000.00	89.00	150.036	6,189.84	-1,970.89	-319.23	1,648.38	0.00	0.00	0.00
8,100.00	89.00	150.036	6,191.59	-2,057.51	-269.30	1,748.01	0.00	0.00	0.00
8,200.00	89.00	150.036	6,193.34	-2,144.13	-219.36	1,847.65	0.00	0.00	0.00
8,300.00	89.00	150.036	6,195.09	-2,230.75	-169.42	1,947.28	0.00	0.00	0.00
8,400.00	89.00	150.036	6,196.84	-2,317.37	-119.48	2,046.91	0.00	0.00	0.00
8,500.00	89.00	150.036	6,198.59	-2,403.99	-69.54	2,146.54	0.00	0.00	0.00
8,600.00	89.00	150.036	6,200.35	-2,490.61	-19.61	2,246.17	0.00	0.00	0.00
8,700.00	89.00	150.036	6,202.10	-2,577.24	30.33	2,345.80	0.00	0.00	0.00
8,800.00	89.00	150.036	6,203.85	-2,663.86	80.27	2,445.44	0.00	0.00	0.00
8,900.00	89.00	150.036	6,205.60	-2,750.48	130.21	2,545.07	0.00	0.00	0.00
9,000.00	89.00	150.036	6,207.35	-2,837.10	180.14	2,644.70	0.00	0.00	0.00
9,100.00	89.00	150.036	6,209.10	-2,923.72	230.08	2,744.33	0.00	0.00	0.00
9,200.00	89.00	150.036	6,210.86	-3,010.34	280.02	2,843.96	0.00	0.00	0.00
9,300.00	89.00	150.036	6,212.61	-3,096.96	329.96	2,943.60	0.00	0.00	0.00
9,400.00	89.00	150.036	6,214.36	-3,183.58	379.90	3,043.23	0.00	0.00	0.00
9,500.00	89.00	150.036	6,216.11	-3,270.20	429.83	3,142.86	0.00	0.00	0.00

03/19/2021



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-11 HM (slot L)
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-11 HM (slot L)	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)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
9,600.00	89.00	150.036	6,217.86	-3,356.82	479.77	3,242.49	0.00	0.00	0.00	
9,700.00	89.00	150.036	6,219.61	-3,443.44	529.71	3,342.12	0.00	0.00	0.00	
9,800.00	89.00	150.036	6,221.36	-3,530.06	579.65	3,441.76	0.00	0.00	0.00	
9,900.00	89.00	150.036	6,223.12	-3,616.68	629.58	3,541.39	0.00	0.00	0.00	
10,000.00	89.00	150.036	6,224.87	-3,703.31	679.52	3,641.02	0.00	0.00	0.00	
10,100.00	89.00	150.036	6,226.62	-3,789.93	729.46	3,740.65	0.00	0.00	0.00	
10,200.00	89.00	150.036	6,228.37	-3,876.55	779.40	3,840.28	0.00	0.00	0.00	
10,300.00	89.00	150.036	6,230.12	-3,963.17	829.33	3,939.92	0.00	0.00	0.00	
10,400.00	89.00	150.036	6,231.87	-4,049.79	879.27	4,039.55	0.00	0.00	0.00	
10,500.00	89.00	150.036	6,233.63	-4,136.41	929.21	4,139.18	0.00	0.00	0.00	
10,600.00	89.00	150.036	6,235.38	-4,223.03	979.15	4,238.81	0.00	0.00	0.00	
10,700.00	89.00	150.036	6,237.13	-4,309.65	1,029.09	4,338.44	0.00	0.00	0.00	
10,800.00	89.00	150.036	6,238.88	-4,396.27	1,079.02	4,438.08	0.00	0.00	0.00	
10,900.00	89.00	150.036	6,240.63	-4,482.89	1,128.96	4,537.71	0.00	0.00	0.00	
11,000.00	89.00	150.036	6,242.38	-4,569.51	1,178.90	4,637.34	0.00	0.00	0.00	
11,100.00	89.00	150.036	6,244.14	-4,656.13	1,228.84	4,736.97	0.00	0.00	0.00	
11,200.00	89.00	150.036	6,245.89	-4,742.75	1,278.77	4,836.60	0.00	0.00	0.00	
11,300.00	89.00	150.036	6,247.64	-4,829.38	1,328.71	4,936.24	0.00	0.00	0.00	
11,400.00	89.00	150.036	6,249.39	-4,916.00	1,378.65	5,035.87	0.00	0.00	0.00	
11,500.00	89.00	150.036	6,251.14	-5,002.62	1,428.59	5,135.50	0.00	0.00	0.00	
11,600.00	89.00	150.036	6,252.89	-5,089.24	1,478.52	5,235.13	0.00	0.00	0.00	
11,700.00	89.00	150.036	6,254.64	-5,175.86	1,528.46	5,334.76	0.00	0.00	0.00	
11,800.00	89.00	150.036	6,256.40	-5,262.48	1,578.40	5,434.39	0.00	0.00	0.00	
11,900.00	89.00	150.036	6,258.15	-5,349.10	1,628.34	5,534.03	0.00	0.00	0.00	
12,000.00	89.00	150.036	6,259.90	-5,435.72	1,678.28	5,633.66	0.00	0.00	0.00	
12,100.00	89.00	150.036	6,261.65	-5,522.34	1,728.21	5,733.29	0.00	0.00	0.00	
12,200.00	89.00	150.036	6,263.40	-5,608.96	1,778.15	5,832.92	0.00	0.00	0.00	
12,300.00	89.00	150.036	6,265.15	-5,695.58	1,828.09	5,932.55	0.00	0.00	0.00	
12,400.00	89.00	150.036	6,266.91	-5,782.20	1,878.03	6,032.19	0.00	0.00	0.00	
12,500.00	89.00	150.036	6,268.66	-5,868.82	1,927.96	6,131.82	0.00	0.00	0.00	
12,600.00	89.00	150.036	6,270.41	-5,955.45	1,977.90	6,231.45	0.00	0.00	0.00	
12,700.00	89.00	150.036	6,272.16	-6,042.07	2,027.84	6,331.08	0.00	0.00	0.00	
12,800.00	89.00	150.036	6,273.91	-6,128.69	2,077.78	6,430.71	0.00	0.00	0.00	
12,900.00	89.00	150.036	6,275.66	-6,215.31	2,127.71	6,530.35	0.00	0.00	0.00	
13,000.00	89.00	150.036	6,277.42	-6,301.93	2,177.65	6,629.98	0.00	0.00	0.00	
13,100.00	89.00	150.036	6,279.17	-6,388.55	2,227.59	6,729.61	0.00	0.00	0.00	
13,200.00	89.00	150.036	6,280.92	-6,475.17	2,277.53	6,829.24	0.00	0.00	0.00	
13,300.00	89.00	150.036	6,282.67	-6,561.79	2,327.47	6,928.87	0.00	0.00	0.00	
13,400.00	89.00	150.036	6,284.42	-6,648.41	2,377.40	7,028.51	0.00	0.00	0.00	
13,500.00	89.00	150.036	6,286.17	-6,735.03	2,427.34	7,128.14	0.00	0.00	0.00	
13,600.00	89.00	150.036	6,287.93	-6,821.65	2,477.28	7,227.77	0.00	0.00	0.00	
13,700.00	89.00	150.036	6,289.68	-6,908.27	2,527.22	7,327.40	0.00	0.00	0.00	
13,800.00	89.00	150.036	6,291.43	-6,994.89	2,577.15	7,427.03	0.00	0.00	0.00	
13,900.00	89.00	150.036	6,293.18	-7,081.52	2,627.09	7,526.67	0.00	0.00	0.00	
14,000.00	89.00	150.036	6,294.93	-7,168.14	2,677.03	7,626.30	0.00	0.00	0.00	
14,100.00	89.00	150.036	6,296.68	-7,254.76	2,726.97	7,725.93	0.00	0.00	0.00	
14,200.00	89.00	150.036	6,298.43	-7,341.38	2,776.90	7,825.56	0.00	0.00	0.00	
14,300.00	89.00	150.036	6,300.19	-7,428.00	2,826.84	7,925.19	0.00	0.00	0.00	
14,400.00	89.00	150.036	6,301.94	-7,514.62	2,876.78	8,024.82	0.00	0.00	0.00	
14,500.00	89.00	150.036	6,303.69	-7,601.24	2,926.72	8,124.46	0.00	0.00	0.00	
14,600.00	89.00	150.036	6,305.44	-7,687.86	2,976.66	8,224.09	0.00	0.00	0.00	
14,700.00	89.00	150.036	6,307.19	-7,774.48	3,026.59	8,323.72	0.00	0.00	0.00	
14,800.00	89.00	150.036	6,308.94	-7,861.10	3,076.53	8,423.35	0.00	0.00	0.00	
14,900.00	89.00	150.036	6,310.70	-7,947.72	3,126.47	8,522.98	0.00	0.00	0.00	

03/19/2021



Planning Report
4705102360



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-11 HM (slot L)
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-11 HM (slot L)	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)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
15,000.00	89.00	150.036	6,312.45	-8,034.34	3,176.41	8,622.62	0.00	0.00	0.00
15,100.00	89.00	150.036	6,314.20	-8,120.96	3,226.34	8,722.25	0.00	0.00	0.00
15,200.00	89.00	150.036	6,315.95	-8,207.59	3,276.28	8,821.88	0.00	0.00	0.00
15,300.00	89.00	150.036	6,317.70	-8,294.21	3,326.22	8,921.51	0.00	0.00	0.00
15,400.00	89.00	150.036	6,319.45	-8,380.83	3,376.16	9,021.14	0.00	0.00	0.00
15,500.00	89.00	150.036	6,321.21	-8,467.45	3,426.10	9,120.78	0.00	0.00	0.00
15,600.00	89.00	150.036	6,322.96	-8,554.07	3,476.03	9,220.41	0.00	0.00	0.00
15,700.00	89.00	150.036	6,324.71	-8,640.69	3,525.97	9,320.04	0.00	0.00	0.00
15,800.00	89.00	150.036	6,326.46	-8,727.31	3,575.91	9,419.67	0.00	0.00	0.00
15,900.00	89.00	150.036	6,328.21	-8,813.93	3,625.85	9,519.30	0.00	0.00	0.00
16,000.00	89.00	150.036	6,329.96	-8,900.55	3,675.78	9,618.94	0.00	0.00	0.00
16,100.00	89.00	150.036	6,331.71	-8,987.17	3,725.72	9,718.57	0.00	0.00	0.00
16,200.00	89.00	150.036	6,333.47	-9,073.79	3,775.66	9,818.20	0.00	0.00	0.00
16,300.00	89.00	150.036	6,335.22	-9,160.41	3,825.60	9,917.83	0.00	0.00	0.00
16,400.00	89.00	150.036	6,336.97	-9,247.03	3,875.53	10,017.46	0.00	0.00	0.00
16,500.00	89.00	150.036	6,338.72	-9,333.66	3,925.47	10,117.10	0.00	0.00	0.00
16,600.00	89.00	150.036	6,340.47	-9,420.28	3,975.41	10,216.73	0.00	0.00	0.00
16,700.00	89.00	150.036	6,342.22	-9,506.90	4,025.35	10,316.36	0.00	0.00	0.00
16,800.00	89.00	150.036	6,343.98	-9,593.52	4,075.29	10,415.99	0.00	0.00	0.00
16,900.00	89.00	150.036	6,345.73	-9,680.14	4,125.22	10,515.62	0.00	0.00	0.00
17,000.00	89.00	150.036	6,347.48	-9,766.76	4,175.16	10,615.26	0.00	0.00	0.00
17,100.00	89.00	150.036	6,349.23	-9,853.38	4,225.10	10,714.89	0.00	0.00	0.00
17,200.00	89.00	150.036	6,350.98	-9,940.00	4,275.04	10,814.52	0.00	0.00	0.00
17,300.00	89.00	150.036	6,352.73	-10,026.62	4,324.97	10,914.15	0.00	0.00	0.00
17,400.00	89.00	150.036	6,354.49	-10,113.24	4,374.91	11,013.78	0.00	0.00	0.00
17,500.00	89.00	150.036	6,356.24	-10,199.86	4,424.85	11,113.41	0.00	0.00	0.00
17,600.00	89.00	150.036	6,357.99	-10,286.48	4,474.79	11,213.05	0.00	0.00	0.00
17,700.00	89.00	150.036	6,359.74	-10,373.10	4,524.72	11,312.68	0.00	0.00	0.00
17,800.00	89.00	150.036	6,361.49	-10,459.73	4,574.66	11,412.31	0.00	0.00	0.00
17,900.00	89.00	150.036	6,363.24	-10,546.35	4,624.60	11,511.94	0.00	0.00	0.00
18,000.00	89.00	150.036	6,364.99	-10,632.97	4,674.54	11,611.57	0.00	0.00	0.00
18,100.00	89.00	150.036	6,366.75	-10,719.59	4,724.48	11,711.21	0.00	0.00	0.00
18,200.00	89.00	150.036	6,368.50	-10,806.21	4,774.41	11,810.84	0.00	0.00	0.00
18,300.00	89.00	150.036	6,370.25	-10,892.83	4,824.35	11,910.47	0.00	0.00	0.00
18,400.00	89.00	150.036	6,372.00	-10,979.45	4,874.29	12,010.10	0.00	0.00	0.00
18,500.00	89.00	150.036	6,373.75	-11,066.07	4,924.23	12,109.73	0.00	0.00	0.00
18,600.00	89.00	150.036	6,375.50	-11,152.69	4,974.16	12,209.37	0.00	0.00	0.00
18,700.00	89.00	150.036	6,377.26	-11,239.31	5,024.10	12,309.00	0.00	0.00	0.00
18,800.00	89.00	150.036	6,379.01	-11,325.93	5,074.04	12,408.63	0.00	0.00	0.00
18,900.00	89.00	150.036	6,380.76	-11,412.55	5,123.98	12,508.26	0.00	0.00	0.00
19,000.00	89.00	150.036	6,382.51	-11,499.17	5,173.91	12,607.89	0.00	0.00	0.00
19,100.00	89.00	150.036	6,384.26	-11,585.80	5,223.85	12,707.53	0.00	0.00	0.00
19,200.00	89.00	150.036	6,386.01	-11,672.42	5,273.79	12,807.16	0.00	0.00	0.00
19,300.00	89.00	150.036	6,387.77	-11,759.04	5,323.73	12,906.79	0.00	0.00	0.00
19,400.00	89.00	150.036	6,389.52	-11,845.66	5,373.67	13,006.42	0.00	0.00	0.00
19,500.00	89.00	150.036	6,391.27	-11,932.28	5,423.60	13,106.05	0.00	0.00	0.00
19,600.00	89.00	150.036	6,393.02	-12,018.90	5,473.54	13,205.69	0.00	0.00	0.00
19,700.00	89.00	150.036	6,394.77	-12,105.52	5,523.48	13,305.32	0.00	0.00	0.00
19,800.00	89.00	150.036	6,396.52	-12,192.14	5,573.42	13,404.95	0.00	0.00	0.00
19,900.00	89.00	150.036	6,398.28	-12,278.76	5,623.35	13,504.58	0.00	0.00	0.00
20,000.00	89.00	150.036	6,400.03	-12,365.38	5,673.29	13,604.21	0.00	0.00	0.00
20,100.00	89.00	150.036	6,401.78	-12,452.00	5,723.23	13,703.85	0.00	0.00	0.00
20,200.00	89.00	150.036	6,403.53	-12,538.62	5,773.17	13,803.48	0.00	0.00	0.00
20,300.00	89.00	150.036	6,405.28	-12,625.24	5,823.10	13,903.11	0.00	0.00	0.00

03/19/2021

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-11 HM (slot L)
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-11 HM (slot L)	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)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
20,400.00	89.00	150.036	6,407.03	-12,711.87	5,873.04	14,002.74	0.00	0.00	0.00	
20,500.00	89.00	150.036	6,408.78	-12,798.49	5,922.98	14,102.37	0.00	0.00	0.00	
20,600.00	89.00	150.036	6,410.54	-12,885.11	5,972.92	14,202.00	0.00	0.00	0.00	
20,700.00	89.00	150.036	6,412.29	-12,971.73	6,022.86	14,301.64	0.00	0.00	0.00	
20,800.00	89.00	150.036	6,414.04	-13,058.35	6,072.79	14,401.27	0.00	0.00	0.00	
20,900.00	89.00	150.036	6,415.79	-13,144.97	6,122.73	14,500.90	0.00	0.00	0.00	
21,000.00	89.00	150.036	6,417.54	-13,231.59	6,172.67	14,600.53	0.00	0.00	0.00	
21,100.00	89.00	150.036	6,419.29	-13,318.21	6,222.61	14,700.16	0.00	0.00	0.00	
21,200.00	89.00	150.036	6,421.05	-13,404.83	6,272.54	14,799.80	0.00	0.00	0.00	
21,300.00	89.00	150.036	6,422.80	-13,491.45	6,322.48	14,899.43	0.00	0.00	0.00	
21,400.00	89.00	150.036	6,424.55	-13,578.07	6,372.42	14,999.06	0.00	0.00	0.00	
21,425.76	89.00	150.036	6,425.00	-13,600.39	6,385.28	15,024.72	0.00	0.00	0.00	
PBHL/TD 21425.76 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-11HM LP I - hit/miss target - Shape	0.00	0.000	6,167.00	-839.75	-981.90	14,446,543.15	1,716,224.00	39.77946400	-80.73017500	
- plan misses target center by 9.15ft at 6689.12ft MD (6166.85 TVD, -835.39 N, -973.85 E)										
- Point										
Van Winkle S-11HM PBI - plan hits target center - Point	0.00	0.000	6,425.00	-13,600.39	6,385.28	14,433,782.54	1,723,591.16	39.74435600	-80.70410300	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,500.00	1,500.00	0.00	0.00	KOP Begin 2°/100' build	
2,300.00	2,289.64	0.00	-110.98	Begin 8°/100' build/turn	
2,494.99	2,476.35	-6.28	-166.72	Begin 17.63° tangent	
5,618.04	5,452.72	-207.50	-1,090.95	Begin 8°/100' build/turn	
6,283.07	6,025.08	-495.18	-1,123.00	Begin 10°/100' build/turn	
6,694.22	6,166.96	-839.82	-971.31	Begin 89.00° lateral	
21,425.76	6,425.00	-13,600.39	6,385.28	PBHL/TD 21425.76 MD/6425.00 TVD	



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-11 HM (slot L)
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-11 HM (slot L)	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:	Lat/Long	Northing:	14,447,369.50 usft	Latitude:	39.78172533
From:		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-11 HM (slot L)					
Well Position	+N/-S	0.00 ft	Northing:	14,447,382.90 usft	Latitude:	39.78176200
	+E/-W	0.00 ft	Easting:	1,717,205.89 usft	Longitude:	-80.72667100
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	51,812.24031673

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	154.850

Plan Survey Tool Program	Date	11/17/2020		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,425.76 rev1 (Original Hole)	NS-GYRO-MS	North sensing gyrocompassing

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	
1,500.00	0.00	0.000	1,500.00	0.00	0.00	0.00	0.00	0.00	0.000	
2,300.00	16.00	270.000	2,289.64	0.00	-110.98	2.00	2.00	0.00	270.000	
2,494.99	17.63	257.718	2,476.35	-6.28	-166.72	2.00	0.84	-6.30	-71.322	
5,618.04	17.63	257.718	5,452.72	-207.50	-1,090.95	0.00	0.00	0.00	0.000	
6,283.07	50.00	164.356	6,025.08	-495.18	-1,123.00	8.00	4.87	-14.04	-107.252	
6,694.22	89.00	150.036	6,166.96	-839.82	-971.31	10.00	9.48	-3.48	-22.091	
21,425.76	89.00	150.036	6,425.00	-13,600.39	6,385.28	0.00	0.00	0.00	0.000	Van Winkle S-11HM F



Database: DB_Aug1919_v14
 Company: Tug Hill Operating LLC
 Project: Marshall County, West Virginia
 Site: Van Winkle
 Well: Van Winkle S-11 HM (slot L)
 Wellbore: Original Hole
 Design: rev1

Local Co-ordinate Reference: Well Van Winkle S-11 HM (slot L)
 TVD Reference: GL @ 754.00ft
 MD Reference: GL @ 754.00ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
100.00	0.00	0.000	100.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
200.00	0.00	0.000	200.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
300.00	0.00	0.000	300.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
400.00	0.00	0.000	400.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
500.00	0.00	0.000	500.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
600.00	0.00	0.000	600.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
700.00	0.00	0.000	700.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
800.00	0.00	0.000	800.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
900.00	0.00	0.000	900.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
1,000.00	0.00	0.000	1,000.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
1,100.00	0.00	0.000	1,100.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
1,200.00	0.00	0.000	1,200.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
1,300.00	0.00	0.000	1,300.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
1,400.00	0.00	0.000	1,400.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
1,500.00	0.00	0.000	1,500.00	0.00	0.00	14,447,382.90	1,717,205.89	39.78176200	-80.72667100
KOP Begin 2°/100' build									
1,600.00	2.00	270.000	1,599.98	0.00	-1.75	14,447,382.90	1,717,204.15	39.78176202	-80.72667721
1,700.00	4.00	270.000	1,699.84	0.00	-6.98	14,447,382.90	1,717,198.91	39.78176206	-80.72669584
1,800.00	6.00	270.000	1,799.45	0.00	-15.69	14,447,382.90	1,717,190.20	39.78176213	-80.72672686
1,900.00	8.00	270.000	1,898.70	0.00	-27.88	14,447,382.90	1,717,178.01	39.78176224	-80.72677024
2,000.00	10.00	270.000	1,997.47	0.00	-43.52	14,447,382.90	1,717,162.37	39.78176237	-80.72682592
2,100.00	12.00	270.000	2,095.62	0.00	-62.60	14,447,382.90	1,717,143.29	39.78176253	-80.72689383
2,200.00	14.00	270.000	2,193.06	0.00	-85.10	14,447,382.90	1,717,120.79	39.78176271	-80.72697390
2,300.00	16.00	270.000	2,289.64	0.00	-110.98	14,447,382.90	1,717,094.91	39.78176293	-80.72706602
Begin 8°/100' build/turn									
2,400.00	16.75	263.411	2,385.60	-1.65	-139.07	14,447,381.25	1,717,066.82	39.78175863	-80.72716604
2,494.99	17.63	257.718	2,476.35	-6.28	-166.72	14,447,376.62	1,717,039.17	39.78174614	-80.72726451
Begin 17.63° tangent									
2,500.00	17.63	257.718	2,481.12	-6.61	-168.21	14,447,376.30	1,717,037.68	39.78174527	-80.72726979
2,600.00	17.63	257.718	2,576.43	-13.05	-197.80	14,447,369.85	1,717,008.09	39.78172782	-80.72737520
2,700.00	17.63	257.718	2,671.73	-19.49	-227.39	14,447,363.41	1,716,978.50	39.78171037	-80.72748060
2,800.00	17.63	257.718	2,767.03	-25.94	-256.99	14,447,356.97	1,716,948.90	39.78169293	-80.72758601
2,900.00	17.63	257.718	2,862.34	-32.38	-286.58	14,447,350.52	1,716,919.31	39.78167548	-80.72769142
3,000.00	17.63	257.718	2,957.64	-38.82	-316.17	14,447,344.08	1,716,889.72	39.78165803	-80.72779682
3,100.00	17.63	257.718	3,052.94	-45.26	-345.77	14,447,337.64	1,716,860.12	39.78164059	-80.72790223
3,200.00	17.63	257.718	3,148.25	-51.71	-375.36	14,447,331.20	1,716,830.53	39.78162314	-80.72800763
3,300.00	17.63	257.718	3,243.55	-58.15	-404.96	14,447,324.75	1,716,800.94	39.78160569	-80.72811304
3,400.00	17.63	257.718	3,338.85	-64.59	-434.55	14,447,318.31	1,716,771.34	39.78158825	-80.72821844
3,500.00	17.63	257.718	3,434.16	-71.04	-464.14	14,447,311.87	1,716,741.75	39.78157080	-80.72832385
3,600.00	17.63	257.718	3,529.46	-77.48	-493.74	14,447,305.42	1,716,712.16	39.78155335	-80.72842926
3,700.00	17.63	257.718	3,624.76	-83.92	-523.33	14,447,298.98	1,716,682.56	39.78153590	-80.72853466
3,800.00	17.63	257.718	3,720.07	-90.36	-552.92	14,447,292.54	1,716,652.97	39.78151846	-80.72864007
3,900.00	17.63	257.718	3,815.37	-96.81	-582.52	14,447,286.10	1,716,623.37	39.78150101	-80.72874547
4,000.00	17.63	257.718	3,910.67	-103.25	-612.11	14,447,279.65	1,716,593.78	39.78148356	-80.72885088
4,100.00	17.63	257.718	4,005.98	-109.69	-641.70	14,447,273.21	1,716,564.19	39.78146611	-80.72895628
4,200.00	17.63	257.718	4,101.28	-116.14	-671.30	14,447,266.77	1,716,534.59	39.78144867	-80.72906169
4,300.00	17.63	257.718	4,196.58	-122.58	-700.89	14,447,260.32	1,716,505.00	39.78143122	-80.72916709
4,400.00	17.63	257.718	4,291.89	-129.02	-730.49	14,447,253.88	1,716,475.41	39.78141377	-80.72927250
4,500.00	17.63	257.718	4,387.19	-135.46	-760.08	14,447,247.44	1,716,445.81	39.78139632	-80.72937790
4,600.00	17.63	257.718	4,482.49	-141.91	-789.67	14,447,241.00	1,716,416.22	39.78137887	-80.72948331
4,700.00	17.63	257.718	4,577.80	-148.35	-819.27	14,447,234.55	1,716,386.63	39.78136142	-80.72958871
4,800.00	17.63	257.718	4,673.10	-154.79	-848.86	14,447,228.11	1,716,357.03	39.78134398	-80.72969412
4,900.00	17.63	257.718	4,768.40	-161.24	-878.45	14,447,221.67	1,716,327.44	39.78132653	-80.72979952

03/19/2021



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-11 HM (slot L)
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-11 HM (slot L)	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	
5,000.00	17.63	257.718	4,863.70	-167.68	-908.05	14,447,215.22	1,716,297.85	39.78130908	-80.72990493	
5,100.00	17.63	257.718	4,959.01	-174.12	-937.64	14,447,208.78	1,716,268.25	39.78129163	-80.73001033	
5,200.00	17.63	257.718	5,054.31	-180.56	-967.23	14,447,202.34	1,716,238.66	39.78127418	-80.73011574	
5,300.00	17.63	257.718	5,149.61	-187.01	-996.83	14,447,195.90	1,716,209.07	39.78125673	-80.73022114	
5,400.00	17.63	257.718	5,244.92	-193.45	-1,026.42	14,447,189.45	1,716,179.47	39.78123928	-80.73032655	
5,500.00	17.63	257.718	5,340.22	-199.89	-1,056.02	14,447,183.01	1,716,149.88	39.78122183	-80.73043195	
5,600.00	17.63	257.718	5,435.52	-206.34	-1,085.61	14,447,176.57	1,716,120.28	39.78120439	-80.73053735	
5,618.04	17.63	257.718	5,452.72	-207.50	-1,090.95	14,447,175.40	1,716,114.95	39.78120124	-80.73055637	
Begin 8°/100' build/turn										
5,700.00	16.85	235.622	5,531.08	-216.86	-1,112.90	14,447,166.05	1,716,092.99	39.78117572	-80.73063462	
5,800.00	19.09	210.497	5,626.34	-239.17	-1,133.20	14,447,143.74	1,716,072.69	39.78111462	-80.73070710	
5,900.00	23.85	192.775	5,719.47	-273.03	-1,145.99	14,447,109.87	1,716,059.90	39.78102172	-80.73075298	
6,000.00	29.96	181.279	5,808.66	-317.79	-1,151.03	14,447,065.11	1,716,054.87	39.78089885	-80.73077139	
6,100.00	36.75	173.537	5,892.18	-372.57	-1,148.21	14,447,010.33	1,716,057.68	39.78074838	-80.73076196	
6,200.00	43.90	167.969	5,968.39	-436.31	-1,137.60	14,446,946.60	1,716,068.29	39.78057325	-80.73072487	
6,283.07	50.00	164.356	6,025.08	-495.18	-1,123.00	14,446,887.72	1,716,082.89	39.78041145	-80.73067354	
Begin 10°/100' build/turn										
6,300.00	51.57	163.543	6,035.78	-507.78	-1,119.37	14,446,875.12	1,716,086.52	39.78037681	-80.73066076	
6,400.00	60.95	159.354	6,091.28	-586.45	-1,092.80	14,446,796.45	1,716,113.10	39.78016055	-80.73056701	
6,500.00	70.43	155.872	6,132.41	-670.56	-1,058.04	14,446,712.34	1,716,147.85	39.77992927	-80.73044420	
6,600.00	79.98	152.782	6,157.92	-757.57	-1,016.15	14,446,625.34	1,716,189.74	39.77968999	-80.73029605	
6,694.22	89.00	150.036	6,166.96	-839.82	-971.31	14,446,543.09	1,716,234.59	39.77946374	-80.73013731	
Begin 89.00° lateral										
6,700.00	89.00	150.036	6,167.07	-844.82	-968.42	14,446,538.08	1,716,237.47	39.77944997	-80.73012709	
6,800.00	89.00	150.036	6,168.82	-931.44	-918.49	14,446,451.46	1,716,287.41	39.77921168	-80.72995028	
6,900.00	89.00	150.036	6,170.57	-1,018.06	-868.55	14,446,364.84	1,716,337.35	39.77897338	-80.72977347	
7,000.00	89.00	150.036	6,172.32	-1,104.68	-818.61	14,446,278.22	1,716,387.28	39.77873508	-80.72959666	
7,100.00	89.00	150.036	6,174.07	-1,191.30	-768.67	14,446,191.60	1,716,437.22	39.77849678	-80.72941985	
7,200.00	89.00	150.036	6,175.82	-1,277.92	-718.73	14,446,104.98	1,716,487.16	39.77825849	-80.72924304	
7,300.00	89.00	150.036	6,177.57	-1,364.54	-668.80	14,446,018.36	1,716,537.10	39.77802019	-80.72906623	
7,400.00	89.00	150.036	6,179.33	-1,451.17	-618.86	14,445,931.74	1,716,587.03	39.77778189	-80.72888942	
7,500.00	89.00	150.036	6,181.08	-1,537.79	-568.92	14,445,845.12	1,716,636.97	39.77754359	-80.72871262	
7,600.00	89.00	150.036	6,182.83	-1,624.41	-518.98	14,445,758.50	1,716,686.91	39.77730529	-80.72853581	
7,700.00	89.00	150.036	6,184.58	-1,711.03	-469.05	14,445,671.88	1,716,736.85	39.77706699	-80.72835901	
7,800.00	89.00	150.036	6,186.33	-1,797.65	-419.11	14,445,585.26	1,716,786.78	39.77682869	-80.72818221	
7,900.00	89.00	150.036	6,188.08	-1,884.27	-369.17	14,445,498.64	1,716,836.72	39.77659039	-80.72800541	
8,000.00	89.00	150.036	6,189.84	-1,970.89	-319.23	14,445,412.02	1,716,886.66	39.77635209	-80.72782861	
8,100.00	89.00	150.036	6,191.59	-2,057.51	-269.30	14,445,325.40	1,716,936.60	39.77611379	-80.72765181	
8,200.00	89.00	150.036	6,193.34	-2,144.13	-219.36	14,445,238.77	1,716,986.53	39.77587549	-80.72747501	
8,300.00	89.00	150.036	6,195.09	-2,230.75	-169.42	14,445,152.15	1,717,036.47	39.77563719	-80.72729822	
8,400.00	89.00	150.036	6,196.84	-2,317.37	-119.48	14,445,065.53	1,717,086.41	39.77539889	-80.72712142	
8,500.00	89.00	150.036	6,198.59	-2,403.99	-69.54	14,444,978.91	1,717,136.35	39.77516059	-80.72694463	
8,600.00	89.00	150.036	6,200.35	-2,490.61	-19.61	14,444,892.29	1,717,186.28	39.77492229	-80.72676784	
8,700.00	89.00	150.036	6,202.10	-2,577.24	30.33	14,444,805.67	1,717,236.22	39.77468398	-80.72659105	
8,800.00	89.00	150.036	6,203.85	-2,663.86	80.27	14,444,719.05	1,717,286.16	39.77444568	-80.72641426	
8,900.00	89.00	150.036	6,205.60	-2,750.48	130.21	14,444,632.43	1,717,336.10	39.77420738	-80.72623747	
9,000.00	89.00	150.036	6,207.35	-2,837.10	180.14	14,444,545.81	1,717,386.03	39.77396908	-80.72606068	
9,100.00	89.00	150.036	6,209.10	-2,923.72	230.08	14,444,459.19	1,717,435.97	39.77373077	-80.72588390	
9,200.00	89.00	150.036	6,210.86	-3,010.34	280.02	14,444,372.57	1,717,485.91	39.77349247	-80.72570711	
9,300.00	89.00	150.036	6,212.61	-3,096.96	329.96	14,444,285.95	1,717,535.85	39.77325417	-80.72553033	
9,400.00	89.00	150.036	6,214.36	-3,183.58	379.90	14,444,199.33	1,717,585.79	39.77301586	-80.72535355	
9,500.00	89.00	150.036	6,216.11	-3,270.20	429.83	14,444,112.71	1,717,635.72	39.77277756	-80.72517677	
9,600.00	89.00	150.036	6,217.86	-3,356.82	479.77	14,444,026.09	1,717,685.66	39.77253925	-80.72499999	
9,700.00	89.00	150.036	6,219.61	-3,443.44	529.71	14,443,939.47	1,717,735.60	39.77230095	-80.72482321	

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Planning Report - Geographic



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-11 HM (slot L)
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-11 HM (slot L)	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	
9,800.00	89.00	150.036	6,221.36	-3,530.06	579.65	14,443,852.85	1,717,785.54	39.77206264	-80.72464643	
9,900.00	89.00	150.036	6,223.12	-3,616.88	629.58	14,443,766.22	1,717,835.47	39.77182434	-80.72446965	
10,000.00	89.00	150.036	6,224.87	-3,703.31	679.52	14,443,679.60	1,717,885.41	39.77158603	-80.72429288	
10,100.00	89.00	150.036	6,226.62	-3,789.93	729.46	14,443,592.98	1,717,935.35	39.77134773	-80.72411610	
10,200.00	89.00	150.036	6,228.37	-3,876.55	779.40	14,443,506.36	1,717,985.29	39.77110942	-80.72393933	
10,300.00	89.00	150.036	6,230.12	-3,963.17	829.33	14,443,419.74	1,718,035.22	39.77087111	-80.72376256	
10,400.00	89.00	150.036	6,231.87	-4,049.79	879.27	14,443,333.12	1,718,085.16	39.77063281	-80.72358579	
10,500.00	89.00	150.036	6,233.63	-4,136.41	929.21	14,443,246.50	1,718,135.10	39.77039450	-80.72340902	
10,600.00	89.00	150.036	6,235.38	-4,223.03	979.15	14,443,159.88	1,718,185.04	39.77015619	-80.72323225	
10,700.00	89.00	150.036	6,237.13	-4,309.65	1,029.09	14,443,073.26	1,718,234.97	39.76991789	-80.72305549	
10,800.00	89.00	150.036	6,238.88	-4,396.27	1,079.02	14,442,986.64	1,718,284.91	39.76967958	-80.72287872	
10,900.00	89.00	150.036	6,240.63	-4,482.89	1,128.96	14,442,900.02	1,718,334.85	39.76944127	-80.72270196	
11,000.00	89.00	150.036	6,242.38	-4,569.51	1,178.90	14,442,813.40	1,718,384.79	39.76920296	-80.72252520	
11,100.00	89.00	150.036	6,244.14	-4,656.13	1,228.84	14,442,726.78	1,718,434.72	39.76896465	-80.72234843	
11,200.00	89.00	150.036	6,245.89	-4,742.75	1,278.77	14,442,640.16	1,718,484.66	39.76872634	-80.72217167	
11,300.00	89.00	150.036	6,247.64	-4,829.38	1,328.71	14,442,553.54	1,718,534.60	39.76848803	-80.72199491	
11,400.00	89.00	150.036	6,249.39	-4,916.00	1,378.65	14,442,466.92	1,718,584.54	39.76824973	-80.72181816	
11,500.00	89.00	150.036	6,251.14	-5,002.62	1,428.59	14,442,380.30	1,718,634.48	39.76801142	-80.72164140	
11,600.00	89.00	150.036	6,252.89	-5,089.24	1,478.52	14,442,293.67	1,718,684.41	39.76777311	-80.72146464	
11,700.00	89.00	150.036	6,254.64	-5,175.86	1,528.46	14,442,207.05	1,718,734.35	39.76753480	-80.72128789	
11,800.00	89.00	150.036	6,256.40	-5,262.48	1,578.40	14,442,120.43	1,718,784.29	39.76729649	-80.72111114	
11,900.00	89.00	150.036	6,258.15	-5,349.10	1,628.34	14,442,033.81	1,718,834.23	39.76705817	-80.72093439	
12,000.00	89.00	150.036	6,259.90	-5,435.72	1,678.28	14,441,947.19	1,718,884.16	39.76681986	-80.72075763	
12,100.00	89.00	150.036	6,261.65	-5,522.34	1,728.21	14,441,860.57	1,718,934.10	39.76658155	-80.72058089	
12,200.00	89.00	150.036	6,263.40	-5,608.96	1,778.15	14,441,773.95	1,718,984.04	39.76634324	-80.72040414	
12,300.00	89.00	150.036	6,265.15	-5,695.58	1,828.09	14,441,687.33	1,719,033.98	39.76610493	-80.72022739	
12,400.00	89.00	150.036	6,266.91	-5,782.20	1,878.03	14,441,600.71	1,719,083.91	39.76586662	-80.72005064	
12,500.00	89.00	150.036	6,268.66	-5,868.82	1,927.96	14,441,514.09	1,719,133.85	39.76562830	-80.71987390	
12,600.00	89.00	150.036	6,270.41	-5,955.45	1,977.90	14,441,427.47	1,719,183.79	39.76538999	-80.71969716	
12,700.00	89.00	150.036	6,272.16	-6,042.07	2,027.84	14,441,340.85	1,719,233.73	39.76515168	-80.71952041	
12,800.00	89.00	150.036	6,273.91	-6,128.69	2,077.78	14,441,254.23	1,719,283.66	39.76491336	-80.71934367	
12,900.00	89.00	150.036	6,275.66	-6,215.31	2,127.71	14,441,167.61	1,719,333.60	39.76467505	-80.71916693	
13,000.00	89.00	150.036	6,277.42	-6,301.93	2,177.65	14,441,080.99	1,719,383.54	39.76443674	-80.71899020	
13,100.00	89.00	150.036	6,279.17	-6,388.55	2,227.59	14,440,994.37	1,719,433.48	39.76419842	-80.71881346	
13,200.00	89.00	150.036	6,280.92	-6,475.17	2,277.53	14,440,907.74	1,719,483.41	39.76396011	-80.71863672	
13,300.00	89.00	150.036	6,282.67	-6,561.79	2,327.47	14,440,821.12	1,719,533.35	39.76372179	-80.71845999	
13,400.00	89.00	150.036	6,284.42	-6,648.41	2,377.40	14,440,734.50	1,719,583.29	39.76348348	-80.71828325	
13,500.00	89.00	150.036	6,286.17	-6,735.03	2,427.34	14,440,647.88	1,719,633.23	39.76324516	-80.71810652	
13,600.00	89.00	150.036	6,287.93	-6,821.65	2,477.28	14,440,561.26	1,719,683.16	39.76300685	-80.71792979	
13,700.00	89.00	150.036	6,289.68	-6,908.27	2,527.22	14,440,474.64	1,719,733.10	39.76276853	-80.71775306	
13,800.00	89.00	150.036	6,291.43	-6,994.89	2,577.15	14,440,388.02	1,719,783.04	39.76253022	-80.71757633	
13,900.00	89.00	150.036	6,293.18	-7,081.52	2,627.09	14,440,301.40	1,719,832.98	39.76229190	-80.71739960	
14,000.00	89.00	150.036	6,294.93	-7,168.14	2,677.03	14,440,214.78	1,719,882.92	39.76205358	-80.71722288	
14,100.00	89.00	150.036	6,296.68	-7,254.76	2,726.97	14,440,128.16	1,719,932.85	39.76181527	-80.71704615	
14,200.00	89.00	150.036	6,298.43	-7,341.38	2,776.90	14,440,041.54	1,719,982.79	39.76157695	-80.71686943	
14,300.00	89.00	150.036	6,300.19	-7,428.00	2,826.84	14,439,954.92	1,720,032.73	39.76133863	-80.71669271	
14,400.00	89.00	150.036	6,301.94	-7,514.62	2,876.78	14,439,868.30	1,720,082.67	39.76110031	-80.71651598	
14,500.00	89.00	150.036	6,303.69	-7,601.24	2,926.72	14,439,781.68	1,720,132.60	39.76086200	-80.71633926	
14,600.00	89.00	150.036	6,305.44	-7,687.86	2,976.66	14,439,695.06	1,720,182.54	39.76062368	-80.71616255	
14,700.00	89.00	150.036	6,307.19	-7,774.48	3,026.59	14,439,608.44	1,720,232.48	39.76038536	-80.71598583	
14,800.00	89.00	150.036	6,308.94	-7,861.10	3,076.53	14,439,521.82	1,720,282.42	39.76014704	-80.71580911	
14,900.00	89.00	150.036	6,310.70	-7,947.72	3,126.47	14,439,435.19	1,720,332.35	39.75990872	-80.71563240	
15,000.00	89.00	150.036	6,312.45	-8,034.34	3,176.41	14,439,348.57	1,720,382.29	39.75967040	-80.71545568	
15,100.00	89.00	150.036	6,314.20	-8,120.96	3,226.34	14,439,261.95	1,720,432.23	39.75943208	-80.71527897	
15,200.00	89.00	150.036	6,315.95	-8,207.59	3,276.28	14,439,175.33	1,720,482.17	39.75919376	-80.71510226	

03/19/2021



Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-11 HM (slot L)
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-11 HM (slot L)	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	
15,300.00	89.00	150.036	6,317.70	-8,294.21	3,326.22	14,439,088.71	1,720,532.10	39.75895544	-80.71492555	
15,400.00	89.00	150.036	6,319.45	-8,380.83	3,376.16	14,439,002.09	1,720,582.04	39.75871712	-80.71474884	
15,500.00	89.00	150.036	6,321.21	-8,467.45	3,426.10	14,438,915.47	1,720,631.98	39.75847880	-80.71457213	
15,600.00	89.00	150.036	6,322.96	-8,554.07	3,476.03	14,438,828.85	1,720,681.92	39.75824048	-80.71439542	
15,700.00	89.00	150.036	6,324.71	-8,640.69	3,525.97	14,438,742.23	1,720,731.85	39.75800216	-80.71421872	
15,800.00	89.00	150.036	6,326.46	-8,727.31	3,575.91	14,438,655.61	1,720,781.79	39.75776384	-80.71404201	
15,900.00	89.00	150.036	6,328.21	-8,813.93	3,625.85	14,438,568.99	1,720,831.73	39.75752552	-80.71386531	
16,000.00	89.00	150.036	6,329.96	-8,900.55	3,675.78	14,438,482.37	1,720,881.67	39.75728719	-80.71368861	
16,100.00	89.00	150.036	6,331.71	-8,987.17	3,725.72	14,438,395.75	1,720,931.60	39.75704887	-80.71351191	
16,200.00	89.00	150.036	6,333.47	-9,073.79	3,775.66	14,438,309.13	1,720,981.54	39.75681055	-80.71333521	
16,300.00	89.00	150.036	6,335.22	-9,160.41	3,825.60	14,438,222.51	1,721,031.48	39.75657223	-80.71315851	
16,400.00	89.00	150.036	6,336.97	-9,247.03	3,875.53	14,438,135.89	1,721,081.42	39.75633390	-80.71298181	
16,500.00	89.00	150.036	6,338.72	-9,333.66	3,925.47	14,438,049.27	1,721,131.36	39.75609558	-80.71280511	
16,600.00	89.00	150.036	6,340.47	-9,420.28	3,975.41	14,437,962.64	1,721,181.29	39.75585726	-80.71262842	
16,700.00	89.00	150.036	6,342.22	-9,506.90	4,025.35	14,437,876.02	1,721,231.23	39.75561893	-80.71245173	
16,800.00	89.00	150.036	6,343.98	-9,593.52	4,075.29	14,437,789.40	1,721,281.17	39.75538061	-80.71227503	
16,900.00	89.00	150.036	6,345.73	-9,680.14	4,125.22	14,437,702.78	1,721,331.11	39.75514228	-80.71209834	
17,000.00	89.00	150.036	6,347.48	-9,766.76	4,175.16	14,437,616.16	1,721,381.04	39.75490396	-80.71192165	
17,100.00	89.00	150.036	6,349.23	-9,853.38	4,225.10	14,437,529.54	1,721,430.98	39.75466563	-80.71174496	
17,200.00	89.00	150.036	6,350.98	-9,940.00	4,275.04	14,437,442.92	1,721,480.92	39.75442731	-80.71156828	
17,300.00	89.00	150.036	6,352.73	-10,026.62	4,324.97	14,437,356.30	1,721,530.86	39.75418898	-80.71139159	
17,400.00	89.00	150.036	6,354.49	-10,113.24	4,374.91	14,437,269.68	1,721,580.79	39.75395066	-80.71121491	
17,500.00	89.00	150.036	6,356.24	-10,199.86	4,424.85	14,437,183.06	1,721,630.73	39.75371233	-80.71103822	
17,600.00	89.00	150.036	6,357.99	-10,286.48	4,474.79	14,437,096.44	1,721,680.67	39.75347400	-80.71086154	
17,700.00	89.00	150.036	6,359.74	-10,373.10	4,524.72	14,437,009.82	1,721,730.61	39.75323568	-80.71068486	
17,800.00	89.00	150.036	6,361.49	-10,459.73	4,574.66	14,436,923.20	1,721,780.54	39.75299735	-80.71050818	
17,900.00	89.00	150.036	6,363.24	-10,546.35	4,624.60	14,436,836.58	1,721,830.48	39.75275902	-80.71033150	
18,000.00	89.00	150.036	6,364.99	-10,632.97	4,674.54	14,436,749.96	1,721,880.42	39.75252070	-80.71015482	
18,100.00	89.00	150.036	6,366.75	-10,719.59	4,724.48	14,436,663.34	1,721,930.36	39.75228237	-80.70997814	
18,200.00	89.00	150.036	6,368.50	-10,806.21	4,774.41	14,436,576.71	1,721,980.29	39.75204404	-80.70980147	
18,300.00	89.00	150.036	6,370.25	-10,892.83	4,824.35	14,436,490.09	1,722,030.23	39.75180571	-80.70962480	
18,400.00	89.00	150.036	6,372.00	-10,979.45	4,874.29	14,436,403.47	1,722,080.17	39.75156738	-80.70944812	
18,500.00	89.00	150.036	6,373.75	-11,066.07	4,924.23	14,436,316.85	1,722,130.11	39.75132905	-80.70927145	
18,600.00	89.00	150.036	6,375.50	-11,152.69	4,974.16	14,436,230.23	1,722,180.04	39.75109072	-80.70909478	
18,700.00	89.00	150.036	6,377.26	-11,239.31	5,024.10	14,436,143.61	1,722,229.98	39.75085239	-80.70891811	
18,800.00	89.00	150.036	6,379.01	-11,325.93	5,074.04	14,436,056.99	1,722,279.92	39.75061407	-80.70874144	
18,900.00	89.00	150.036	6,380.76	-11,412.55	5,123.98	14,435,970.37	1,722,329.86	39.75037574	-80.70856478	
19,000.00	89.00	150.036	6,382.51	-11,499.17	5,173.91	14,435,883.75	1,722,379.80	39.75013740	-80.70838811	
19,100.00	89.00	150.036	6,384.26	-11,585.80	5,223.85	14,435,797.13	1,722,429.73	39.74989907	-80.70821145	
19,200.00	89.00	150.036	6,386.01	-11,672.42	5,273.79	14,435,710.51	1,722,479.67	39.74966074	-80.70803478	
19,300.00	89.00	150.036	6,387.77	-11,759.04	5,323.73	14,435,623.89	1,722,529.61	39.74942241	-80.70785812	
19,400.00	89.00	150.036	6,389.52	-11,845.66	5,373.67	14,435,537.27	1,722,579.55	39.74918408	-80.70768146	
19,500.00	89.00	150.036	6,391.27	-11,932.28	5,423.60	14,435,450.65	1,722,629.48	39.74894575	-80.70750480	
19,600.00	89.00	150.036	6,393.02	-12,018.90	5,473.54	14,435,364.03	1,722,679.42	39.74870742	-80.70732814	
19,700.00	89.00	150.036	6,394.77	-12,105.52	5,523.48	14,435,277.41	1,722,729.36	39.74846909	-80.70715149	
19,800.00	89.00	150.036	6,396.52	-12,192.14	5,573.42	14,435,190.79	1,722,779.30	39.74823075	-80.70697483	
19,900.00	89.00	150.036	6,398.28	-12,278.76	5,623.35	14,435,104.16	1,722,829.23	39.74799242	-80.70679817	
20,000.00	89.00	150.036	6,400.03	-12,365.38	5,673.29	14,435,017.54	1,722,879.17	39.74775409	-80.70662152	
20,100.00	89.00	150.036	6,401.78	-12,452.00	5,723.23	14,434,930.92	1,722,929.11	39.74751575	-80.70644487	
20,200.00	89.00	150.036	6,403.53	-12,538.62	5,773.17	14,434,844.30	1,722,979.05	39.74727742	-80.70626822	
20,300.00	89.00	150.036	6,405.28	-12,625.24	5,823.10	14,434,757.68	1,723,028.98	39.74703909	-80.70609157	
20,400.00	89.00	150.036	6,407.03	-12,711.87	5,873.04	14,434,671.06	1,723,078.92	39.74680075	-80.70591492	
20,500.00	89.00	150.036	6,408.78	-12,798.49	5,922.98	14,434,584.44	1,723,128.86	39.74656242	-80.70573827	
20,600.00	89.00	150.036	6,410.54	-12,885.11	5,972.92	14,434,497.82	1,723,178.80	39.74632408	-80.70556163	
20,700.00	89.00	150.036	6,412.29	-12,971.73	6,022.86	14,434,411.20	1,723,228.73	39.74608575	-80.70538498	

03/19/2021

Database:	DB_Aug1919_v14	Local Co-ordinate Reference:	Well Van Winkle S-11 HM (slot L)
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-11 HM (slot L)	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	
20,800.00	89.00	150.036	6,414.04	-13,058.35	6,072.79	14,434,324.58	1,723,278.67	39.74584741	-80.70520834	
20,900.00	89.00	150.036	6,415.79	-13,144.97	6,122.73	14,434,237.96	1,723,328.61	39.74560908	-80.70503169	
21,000.00	89.00	150.036	6,417.54	-13,231.59	6,172.67	14,434,151.34	1,723,378.55	39.74537074	-80.70485505	
21,100.00	89.00	150.036	6,419.29	-13,318.21	6,222.61	14,434,064.72	1,723,428.49	39.74513241	-80.70467841	
21,200.00	89.00	150.036	6,421.05	-13,404.83	6,272.54	14,433,978.10	1,723,478.42	39.74489407	-80.70450177	
21,300.00	89.00	150.036	6,422.80	-13,491.45	6,322.48	14,433,891.48	1,723,528.36	39.74465573	-80.70432514	
21,400.00	89.00	150.036	6,424.55	-13,578.07	6,372.42	14,433,804.86	1,723,578.30	39.74441740	-80.70414850	
21,425.76	89.00	150.036	6,425.00	-13,600.39	6,385.28	14,433,782.54	1,723,591.16	39.74435600	-80.70410300	
PBHL/TD 21425.76 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-11HM LP - hit/miss target - Shape - Point	0.00	0.000	6,167.00	-839.75	-981.90	14,446,543.15	1,716,224.00	39.77946400	-80.73017500	
- plan misses target center by 9.15ft at 6689.12ft MD (6166.85 TVD, -835.39 N, -973.85 E)										
Van Winkle S-11HM PBI - plan hits target center - Point	0.00	0.000	6,425.00	-13,600.39	6,385.28	14,433,782.54	1,723,591.16	39.74435600	-80.70410300	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,500.00	1,500.00	0.00	0.00	KOP Begin 2°/100' build	
2,300.00	2,289.64	0.00	-110.98	Begin 8°/100' build/turn	
2,494.99	2,476.35	-6.28	-166.72	Begin 17.63° tangent	
5,618.04	5,452.72	-207.50	-1,090.95	Begin 8°/100' build/turn	
6,283.07	6,025.08	-495.18	-1,123.00	Begin 10°/100' build/turn	
6,694.22	6,166.96	-839.82	-971.31	Begin 89.00° lateral	
21,425.76	6,425.00	-13,600.39	6,385.28	PBHL/TD 21425.76 MD/6425.00 TVD	

WW-9
(4/16)

API Number 47 - 051 - 4705102360
Operator's Well No. Van Winkle S-11HM

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 contain

Proposed Disposal Method For Treated Pit Wastes:

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

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

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

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

Additives to be used in drilling medium? Barite for weight

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

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

-Landfill or offsite name/permit number? Wetzel County Sanitary Landfill (SWF-1021 / WV0109185) and Westmoreland Sanitary Landfill, LLC (SAN1405 / PA DEP EC#1388426

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

RECEIVED
Office of Oil and Gas
FEB 03 2021

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

[Signature]

Commonwealth of Pennsylvania - Notary Seal
David Gabriel Delallo, Notary Public
Washington County
My commission expires February 18, 2024
Commission number 1267492
Member, Pennsylvania Association of Notaries

Notary Public

My commission expires _____

WV Department of Environmental Protection

03/19/2021

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: Bary Stiles

Comments: _____

Title: Oil and Gas Inspector

Date: 1-21-21

Field Reviewed? Yes No

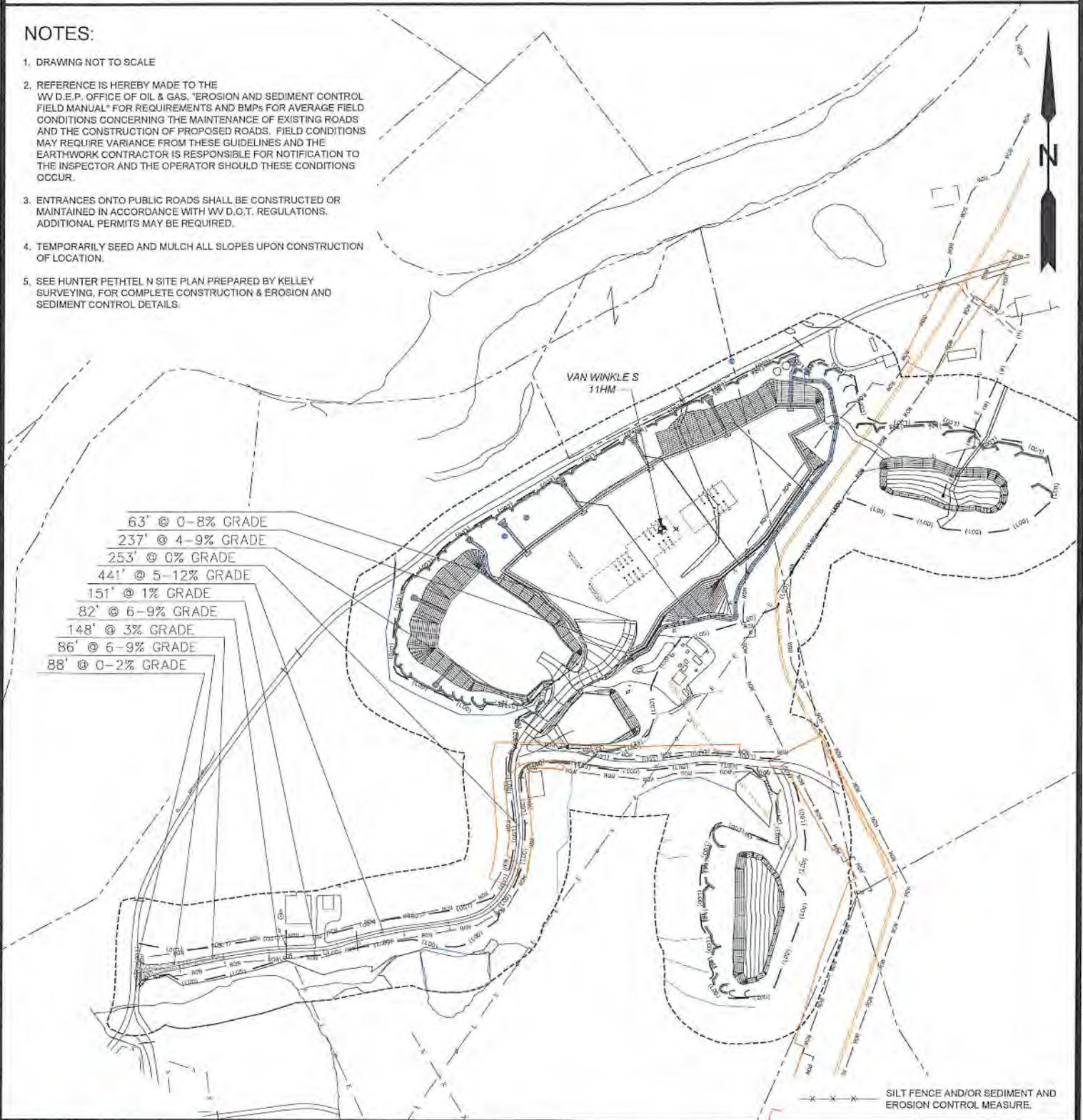
RECEIVED
Office of Oil and Gas
FEB 03 2021
WV Department of
Environmental Protection

03/19/2021

PROPOSED
VAN WINKLE S - 11HM 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 | 304.295.5296
 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.C.M.	8952	12/24/2020	NONE



TUG HILL
OPERATING
03/19/2021

4705102360



Well Site Safety Plan

Tug Hill Operating, LLC

Bony Stehly 1-21-21

Well Name: Van Winkle S-11HM

Pad Name: Hunter Pethel

UTM (meters), NAD83, Zone 17:

Northing: 4,403,571.14

Easting: 523,405.42

January 2021

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Office of Oil and Gas
FEB 03 2021
WV Department of
Environmental Protection

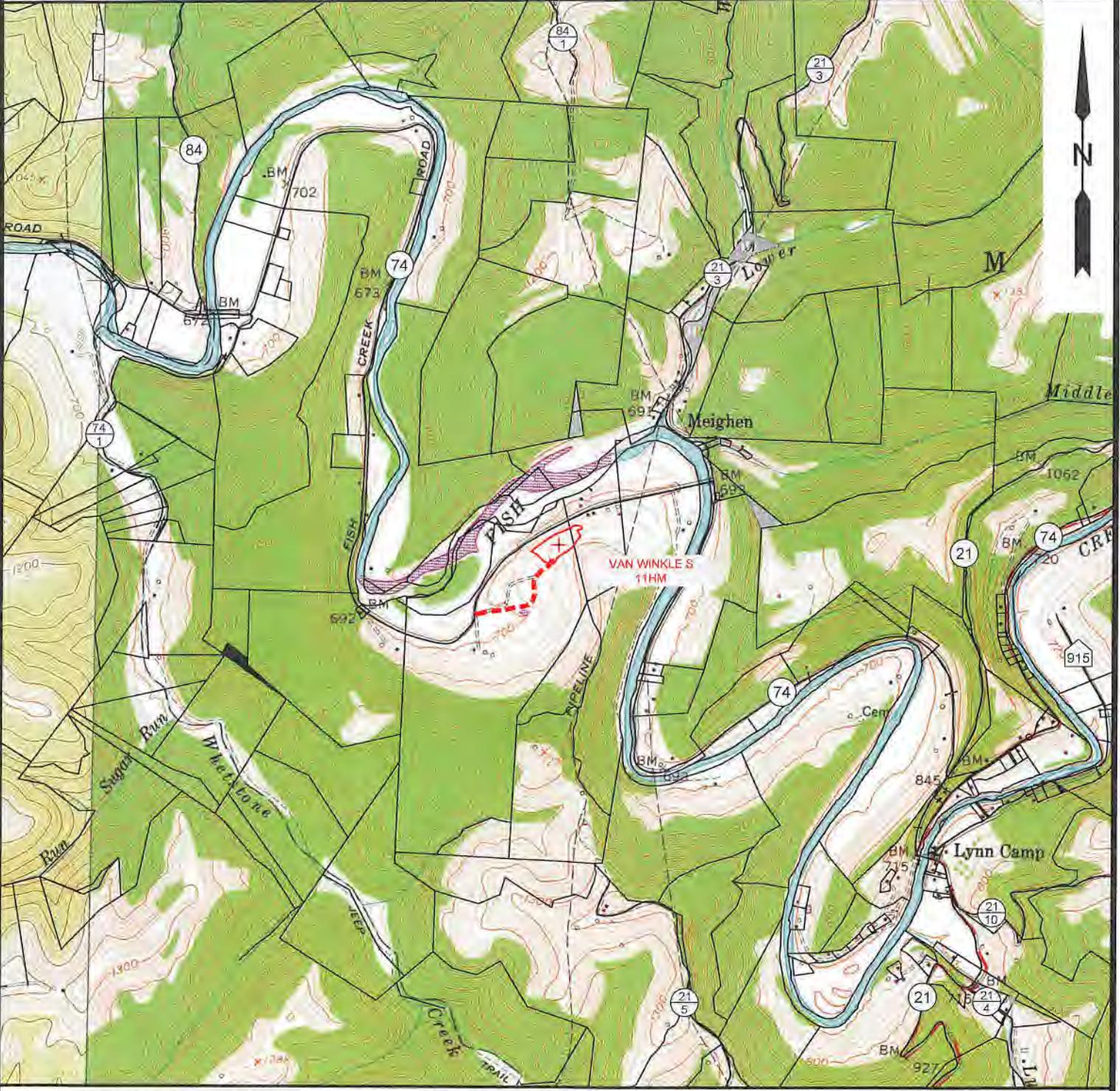
03/19/2021

4500102360

WW-9

PROPOSED VAN WINKLE S - 11HM

SUPPLEMENT PG. 2



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 | 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" = 2000'



TUG HILL
OPERATING
03/19/2021

10,527' B.H.

5,154' T.H.

**HUNTER PETHTEL LEASE
VAN WINKLE S 11HM WELL
TUG HILL OPERATING**

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. 489,211.16 E. 1,623,770.52
NAD'83 GEO. LAT-(N) 39.781762 LONG-(W) 80.726671
NAD'83 UTM (M) N. 4,403,571.14 E. 523,405.42

LANDING POINT

NAD'83 S.P.C.(FT) N. 468,397.3 E. 1,622,764.9
NAD'83 GEO. LAT-(N) 39.779464 LONG-(W) 80.730137
NAD'83 UTM (M) N. 4,403,315.1 E. 523,109.3

BOTTOM HOLE

NAD'83 S.P.C.(FT) N. 455,501.3 E. 1,629,929.7
NAD'83 GEO. LAT-(N) 39.744356 LONG-(W) 80.704103
NAD'83 UTM (M) N. 4,399,425.7 E. 525,351.6

B.H.

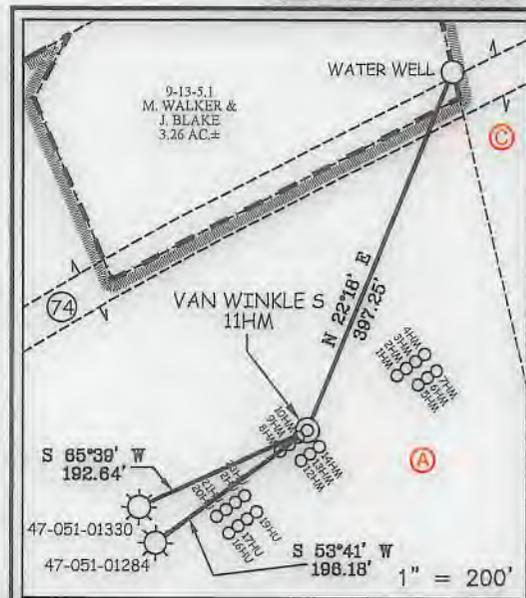
T.H.

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

2,056' B.H.
3,608' T.H.

PARCEL	SURFACE ADJOINER	ACRES
9-13-5.1	MICHAEL WALKER & JOSEPH BLAKE	3.26
9-18-15.1	NICHOLAS FROHNAPPEL, ET UX	0.68
9-18-16.1	NICHOLAS FROHNAPPEL, ET UX	1.50
9-18-16.2	JOHN F. WAYMAN	2.17
9-18-16.3	BERNARD KLUG, ET UX ESTS.	1.818
9-18-18.1	JOHN F. WAYMAN	1.10

REFERENCES



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 & TOPD MARK SCALE IS 1"=2000'.
- BASED ON WV DOT COUNTY ROUTE 74 IS A 40' STRIP OF LAND ACQUIRED IN NUMEROUS DEEDS.



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 | 304.295.5296
slswv.com

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. 849 *C. Victor Moyers*



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

DATE JANUARY 19, 20 21

REVISED _____

OPERATORS WELL NO. VAN WINKLE S 11HM

API WELL NO. 47 - 051 - 02360
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 8952P11HM.dwg
SCALE 1" = 2000'
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)

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

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION GROUND: 755.90' 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 93.2 ±

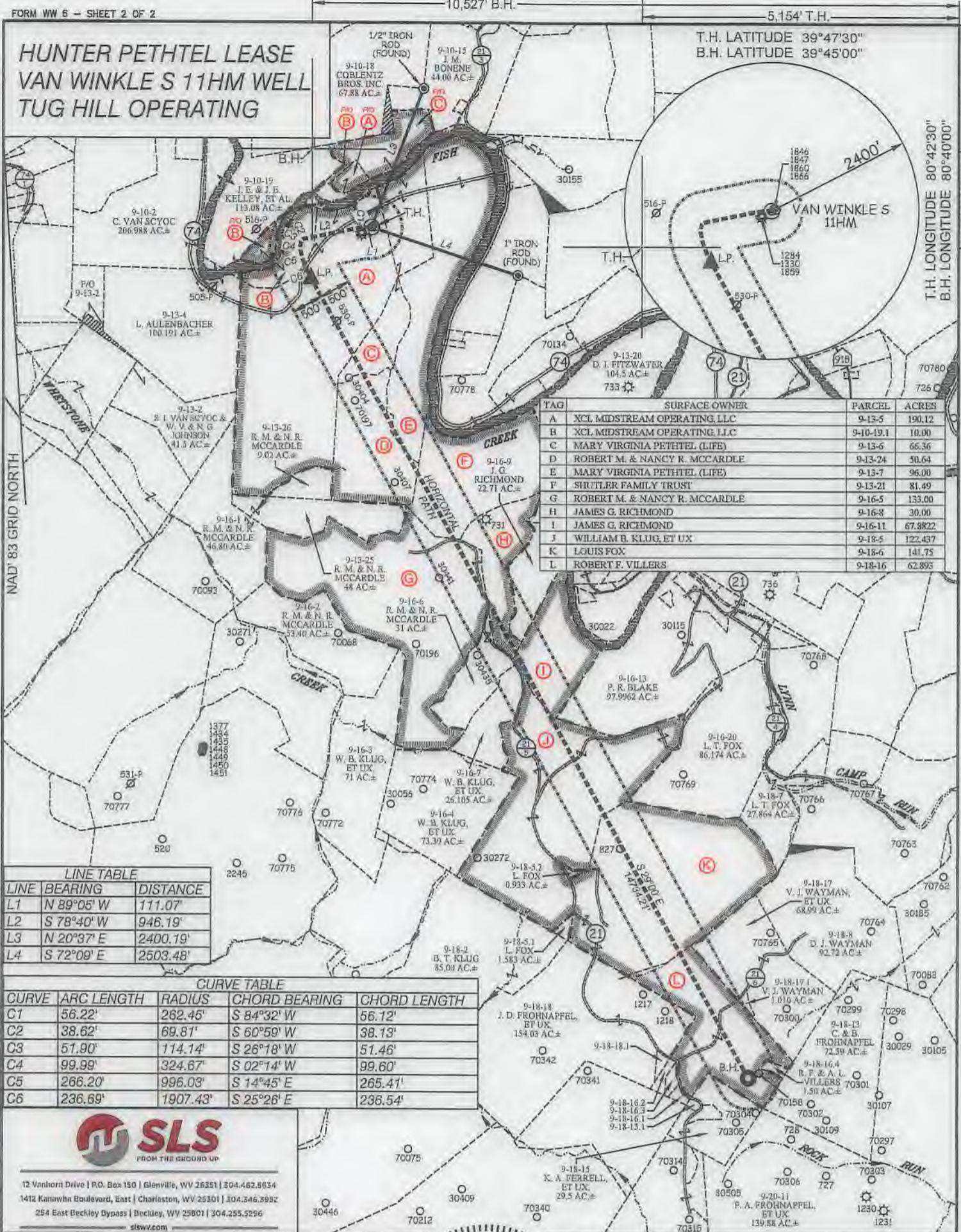
PROPOSED WORK :
DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD: 6,282' / TMD: 21,426'

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

COUNTY NAME
PERMIT

03/19/2021

HUNTER PETHTEL LEASE VAN WINKLE S 11HM WELL TUG HILL OPERATING



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

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

TAG	SURFACE OWNER	PARCEL	ACRES
A	XCL MIDSTREAM OPERATING, LLC	9-13-5	190.12
B	XCL MIDSTREAM OPERATING, LLC	9-10-19.1	10.00
C	MARY VIRGINIA PETHTEL (LIFE)	9-13-6	66.36
D	ROBERT M. & NANCY R. MCCARDLE	9-13-24	30.64
E	MARY VIRGINIA PETHTEL (LIFE)	9-13-7	96.00
F	SITTLER FAMILY TRUST	9-13-21	81.49
G	ROBERT M. & NANCY R. MCCARDLE	9-16-5	133.00
H	JAMES G. RICHMOND	9-16-8	30.00
I	JAMES G. RICHMOND	9-16-11	67.822
J	WILLIAM R. KLUG, ET UX	9-18-5	122.437
K	LOUIS FOX	9-18-6	141.75
L	ROBERT F. VILLERS	9-18-16	62.893

LINE	BEARING	DISTANCE
L1	N 89°05' W	111.07'
L2	S 78°40' W	946.19'
L3	N 20°37' E	2400.19'
L4	S 72°09' E	2503.48'

CURVE	ARC LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	56.22'	262.45'	S 84°32' W	56.12'
C2	38.62'	69.81'	S 60°59' W	38.73'
C3	51.90'	114.14'	S 26°18' W	51.46'
C4	99.99'	324.67'	S 02°14' W	99.60'
C5	266.20'	996.03'	S 14°45' E	265.41'
C6	236.69'	1907.43'	S 25°26' E	236.54'



12 Vanhora 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

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)
 NAD'83 S.P.C.(FT) N. 469,211.16 E. 1,629,770.52
 NAD'83 GEO. LAT-(N) 39.781762 LONG-(W) 80.726671
 NAD'83 UTM (M) N. 4,403,571.14 E. 523,405.42

LANDING POINT
 NAD'83 S.P.C.(FT) N. 468,887.3 E. 1,622,784.9
 NAD'83 GEO. LAT-(N) 39.779464 LONG-(W) 80.730137
 NAD'83 UTM (M) N. 4,403,315.1 E. 523,109.3

BOTTOM HOLE
 NAD'83 S.P.C.(FT) N. 455,501.3 E. 1,629,929.7
 NAD'83 GEO. LAT-(N) 39.744356 LONG-(W) 80.704109
 NAD'83 UTM (M) N. 4,399,425.7 E. 525,351.6



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

P.S. *C. Victor Moyers*
 849

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. 8952P11HM.dwg
 VAN WINKLE S 11HM-REV1
 DATE JANUARY 19, 20 21
 REVISED _____
 OPERATORS WELL NO. VAN WINKLE S 11HM
 API WELL NO. 47 - 051 - 02360 ***
 STATE COUNTY PERMIT

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

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

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

COUNTY NAME
 PERMIT

03/19/2021

WW-6A1
(5/13)

Operator's Well No. Van Winkle S-11HM

**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 Morris*
 Its: Permitting Specialist - Appalachia Region

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book	Page	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	Central Michigan Exploration LLC to Stone Energy Corp.: AB 21/288 & 21/497	Stone Energy Corp. to EQT Production Company: AB 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31352	9-10-19.1	B	DENNIS W HUNTER AND KATHY A HUNTER	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	690	60	N/A	N/A	N/A	N/A	N/A	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: AB 21/497	Stone Energy Corp. to EQT Production Company: AB 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31303	9-13-6	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	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: AB 21/288 & 21/356	Stone Energy Corp. to EQT Production Company: AB 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31304	9-13-6	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	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: AB 21/288 & 21/356	Stone Energy Corp. to EQT Production Company: AB 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31306	9-13-6	C	RICHARD CUNNINGHAM	STONE ENERGY CORPORATION	1/8+	859	595	N/A	Stone Energy Corp. to EQT Production Company: AB 38/75	EQT Production Company to TH Exploration LLC: 48/21						
10*31307	9-13-6	C	LINDA DANLEY	STONE ENERGY CORPORATION	1/8+	859	593	N/A	Stone Energy Corp. to EQT Production Company: AB 38/75	EQT Production Company to TH Exploration LLC: 48/21						
10*31308	9-13-6	C	SUZY WALKER	STONE ENERGY CORPORATION	1/8+	859	591	N/A	Stone Energy Corp. to EQT Production Company: AB 38/75	EQT Production Company to TH Exploration LLC: 48/21						
10*21131	9-13-24	D	ROBERT M MCCARDLE & NANCY R MCCARDLE	TH EXPLORATION LLC	1/8+	951	621	N/A	N/A	N/A						
10*28341	9-13-24	D	WILLIAM BRAD FOX	TH EXPLORATION LLC	1/8+	1071	466	N/A	N/A	N/A						
10*28622	9-13-24	D	LINDA SMITH	TH EXPLORATION LLC	1/8+	1075	33	N/A	N/A	N/A						
10*28623	9-13-24	D	ANN MILLER	TH EXPLORATION LLC	1/8+	1075	31	N/A	N/A	N/A						
10*31313	9-13-24	D	MARY V PETHTEL AND FRANK E PETHTEL	CENTRAL MICHIGAN EXPLORATION LLC	1/8+	674	354	N/A	N/A	N/A	N/A	N/A	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: AB 21/288 & 21/356	Stone Energy Corp. to EQT Production Company: AB 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31314	9-13-24	D	JOHN FOX	STONE ENERGY CORPORATION	1/8+	703	276	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21						
10*31315	9-13-24	D	MICHAEL SHUTLER	STONE ENERGY CORPORATION	1/8+	715	207	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21						
10*31316	9-13-24	D	SUSAN WALKER	STONE ENERGY CORPORATION	1/8+	864	563	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21						
10*31317	9-13-24	D	RICHARD CUNNINGHAM	STONE ENERGY CORPORATION	1/8+	164A	416	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21						

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Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book	Page	Assignment		
10*31318	9-13-24	D	LINDA DANLEY	STONE ENERGY CORPORATION	1/8+	868	438	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31319	9-13-24	D	AARON MURRAY AND REGINA MURRAY	STONE ENERGY CORPORATION	1/8+	868	436	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31320	9-13-24	D	THOMAS JOHN FOX	STONE ENERGY CORPORATION	1/8+	872	355	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31321	9-13-24	D	MARK H FOX	STONE ENERGY CORPORATION	1/8+	872	349	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31322	9-13-24	D	PAUL G FOX	STONE ENERGY CORPORATION	1/8+	872	351	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31323	9-13-24	D	LOUIS T FOX	STONE ENERGY CORPORATION	1/8+	872	353	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31324	9-13-24	D	MARY A FOX	STONE ENERGY CORPORATION	1/8+	872	357	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31325	9-13-24	D	DAVID E FOX	STONE ENERGY CORPORATION	1/8+	872	347	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31326	9-13-24	D	ROBERT FRANCIS VILLERS AND APRIL VILLERS	STONE ENERGY CORPORATION	1/8+	870	126	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31327	9-13-24	D	MARY JOSEPHINE NICE AND JACOB W NICE	STONE ENERGY CORPORATION	1/8+	870	124	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31328	9-13-24	D	DEBRA COURTWRIGHT	STONE ENERGY CORPORATION	1/8+	702	376	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31329	9-13-24	D	DAVID C YEAGER	STONE ENERGY CORPORATION	1/8+	702	368	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31330	9-13-24	D	HERBERT YEAGER	STONE ENERGY CORPORATION	1/8+	702	370	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31331	9-13-24	D	HOWARD FOX	STONE ENERGY CORPORATION	1/8+	697	431	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book	Page	Assignment		
10*31332	9-13-24	D	ROBERT L SHUTLER	STONE ENERGY CORPORATION	1/8+	697	435	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31333	9-13-24	D	CHARLOTTE JACKLEY	STONE ENERGY CORPORATION	1/8+	697	433	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31334	9-13-24	D	BETTY PERSINGER	STONE ENERGY CORPORATION	1/8+	702	374	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31335	9-13-24	D	BETTY JEAN OTTE	STONE ENERGY CORPORATION	1/8+	702	346	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31336	9-13-24	D	JEANIE HUFF	STONE ENERGY CORPORATION	1/8+	702	358	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31337	9-13-24	D	JANE FOX	STONE ENERGY CORPORATION	1/8+	702	354	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31338	9-13-24	D	KIM JONES	STONE ENERGY CORPORATION	1/8+	702	364	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31339	9-13-24	D	MARY VIRGINIA PETHTEL AND FRANK E PETHTEL	STONE ENERGY CORPORATION	1/8+	702	362	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31340	9-13-24	D	MARY JANE FERKOL	STONE ENERGY CORPORATION	1/8+	702	350	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31341	9-13-24	D	MARY KAY FRENCH	STONE ENERGY CORPORATION	1/8+	702	348	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31342	9-13-24	D	MARY ELLEN YEAGER	STONE ENERGY CORPORATION	1/8+	702	366	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31343	9-13-24	D	ROBERTA FROHNAPFEL	STONE ENERGY CORPORATION	1/8+	702	356	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31344	9-13-24	D	MARTI SNYDER	STONE ENERGY CORPORATION	1/8+	702	384	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21
10*31345	9-13-24	D	JAMES D FROHNAPFEL	STONE ENERGY CORPORATION	1/8+	702	360	N/A	Stone Energy Corporation to EQT Production Company: 38/75	EQT Production Company to TH Exploration LLC: 48/21

4705102360

WW-6A1 Supplement

Operator's Well No. Van Winkle S - 11HM

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book	Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*31346	9-13-24	D	HELEN SHUTLER	STONE ENERGY CORPORATION	1/8+	702	382	N/A	N/A	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*31347	9-13-24	D	DOROTHY ARGENTA	STONE ENERGY CORPORATION	1/8+	702	352	N/A	N/A	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*31348	9-13-24	D	KAREN EVANS	STONE ENERGY CORPORATION	1/8+	703	274	N/A	N/A	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*31349	9-13-24	D	ROBERT L FROHNAPFEL	STONE ENERGY CORPORATION	1/8+	703	278	N/A	N/A	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*31350	9-13-24	D	RUTH ANN SOUTH	STONE ENERGY CORPORATION	1/8+	702	378	N/A	N/A	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*31351	9-13-24	D	CAROLINE J SHUTLER-CANALES	STONE ENERGY CORPORATION	1/8+	702	380	N/A	N/A	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	E	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	N/A	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: AB 21/288 & 21/356	Stone Energy Corp. to EQT Production Company: AB 38/75 EQT Production Company to TH Exploration LLC: 48/21
10*31304	9-13-7	E	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	N/A	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: AB 21/288 & 21/356	Stone Energy Corp. to EQT Production Company: AB 38/75 EQT Production Company to TH Exploration LLC: 48/21
10*31305	9-13-7	E	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	N/A	N/A	Central Michigan Exploration LLC to Stone Energy Corp.: AB 38/54	Stone Energy Corp. to EQT Production Company: AB 38/75 EQT Production Company to TH Exploration LLC: 48/21
10*31309	9-13-7	E	RICHARD CUNNINGHAM	STONE ENERGY CORPORATION	1/8+	870	122	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corp. to EQT Production Company: AB 38/75 EQT Production Company to TH Exploration LLC: 48/21
10*31310	9-13-7	E	SUSAN WALKER	STONE ENERGY CORPORATION	1/8+	870	139	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corp. to EQT Production Company: AB 38/75 EQT Production Company to TH Exploration LLC: 48/21
10*31311	9-13-7	E	LINDA DANLEY	STONE ENERGY CORPORATION	1/8+	870	141	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Stone Energy Corp. to EQT Production Company: AB 38/75 EQT Production Company to TH Exploration LLC: 48/21
10*23197	9-13-21	F	J W KELLEY AND R A KELLEY	TG STILES	1/8+	63	156	N/A	TG Stiles to South Penn Oil Company: 60/367	South Penn Oil Company to Hope Natural Gas Company: 209/552	Hope natural Gas Company to AM Snider & Duane Snyder dba Hundred Gas Company: 446/186	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

4705102360

WW-6A1 Supplement

Operator's Well No. Van Winkle S - 11HM

Lease ID	Parcel	Tag	Grantor, Lessor, Etc.	Grantee, Lessee, Etc.	Royalty	Deed Book	Page	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment	Assignment
10*28268	9-16-5	G	JOSEPH SHUTLER AND ELIZABETH SHUTLER	TG STILES	1/8+	63 81	203 451	TG Stiles to South Penn Oil Company: 60/366	South Penn Oil Company to Tri State Gas Company: 80/150	Tri-State Gas Company to The Manufacturers Light & Heat Co: 148/388	The Manufacturers Light & Heat Company to AM Snider & Duane Snider 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*23197	9-16-8	H	J W KELLEY AND R A KELLEY	TG STILES	1/8+	63	156	N/A	TG Stiles to South Penn Oil Company: 60/367	South Penn Oil Company to Hope Natural Gas Company: 209/552	Hope natural Gas Company to AM Snider & Duane Snyder dba Hundred Gas Company: 446/186	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*16481	9-16-11	I	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	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*28268	9-18-5	J	JOSEPH SHUTLER AND ELIZABETH SHUTLER	TG STILES	1/8+	63 81	203 451	TG Stiles to South Penn Oil Company: 60/366	South Penn Oil Company to Tri State Gas Company: 80/150	Tri-State Gas Company to The Manufacturers Light & Heat Co: 148/388	The Manufacturers Light & Heat Company to AM Snider & Duane Snider 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*28268	9-18-6	K	JOSEPH SHUTLER AND ELIZABETH SHUTLER	TG STILES	1/8+	63 81	203 451	TG Stiles to South Penn Oil Company: 60/366	South Penn Oil Company to Tri State Gas Company: 80/150	Tri-State Gas Company to The Manufacturers Light & Heat Co: 148/388	The Manufacturers Light & Heat Company to AM Snider & Duane Snider 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*28265	9-18-16	L	ROBERT F VILLERS AND APRIL L VILLERS	TH EXPLORATION LLC	1/8+	1073	381	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

4705102360

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

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WV Department of
Environmental Protection

03/19/2021



TUG HILL

4705102360

January 15, 2021

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

RE: Van Winkle S-11HM

Subject: Marshall County Route 74, Route 21/5 and Route 21/6 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, Route 21/5 and Route 21/6 in the area reflected on the Van Winkle S-11HM 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,

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

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WV Department of
Environmental Protection

03/19/2021

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

Date of Notice Certification: 01/19/2021

API No. 47- 051 -

Operator's Well No. Van Winkle S-11HM

Well Pad Name: Hunter Pothel

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>523,405.42</u>
County: <u>Marshall</u>		Northing: <u>4,403,571.14</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>Fisht 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.

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: *PLEASE CHECK ALL THAT APPLY		OOG OFFICE USE ONLY
<input type="checkbox"/> 1. NOTICE OF SEISMIC ACTIVITY or <input checked="" type="checkbox"/> NOTICE NOT REQUIRED BECAUSE NO SEISMIC ACTIVITY WAS CONDUCTED		<input type="checkbox"/> RECEIVED/ NOT REQUIRED
<input checked="" type="checkbox"/> 2. NOTICE OF ENTRY FOR PLAT SURVEY or <input type="checkbox"/> NO PLAT SURVEY WAS CONDUCTED		<input checked="" type="checkbox"/> RECEIVED
<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 <input type="checkbox"/> WRITTEN WAIVER BY SURFACE OWNER (PLEASE ATTACH)		<input type="checkbox"/> RECEIVED/ NOT REQUIRED
<input checked="" type="checkbox"/> 4. NOTICE OF PLANNED OPERATION		<input checked="" type="checkbox"/> RECEIVED
<input checked="" type="checkbox"/> 5. PUBLIC NOTICE		<input checked="" type="checkbox"/> RECEIVED
<input checked="" type="checkbox"/> 6. NOTICE OF APPLICATION		<input checked="" type="checkbox"/> RECEIVED

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.

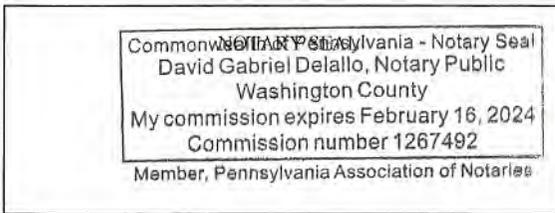
03/19/2021

4705102360

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



Subscribed and sworn before me this 19 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.

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(9-13)

4705102360
API NO. 47-051
OPERATOR WELL NO. Van Winkle S-11HM
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:** 1/19/2021

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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WV Department of
Environmental Protection

03/19/2021

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 water purveyor that he or she can obtain from the Chief a list of water testing laboratories in the subject area capable of and qualified to test water supplies in accordance with standard acceptable methods.

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

Well Location Restrictions

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

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API NO. 47-051-
OPERATOR WELL NO. Van Winkle S-11HM
Well Pad Name: Hunter Pethtel

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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Office of Oil and Gas

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WV Department of
Environmental Protection

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.**

03/19/2021

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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WW-6A
(8-13)

API NO. 47-051 **4705102360**
OPERATOR WELL NO. Van Winkle S-11HM
Well Pad Name: Hunter Pethel

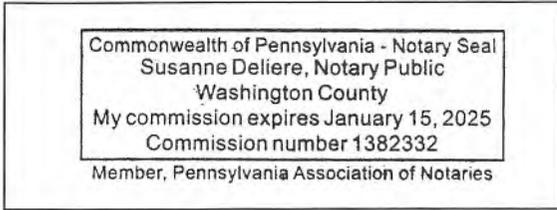
Notice is hereby given by:

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

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 deprivacyofficer@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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Exhibit WW-6A

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

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

Well: Van Winkle S – 11HM
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>

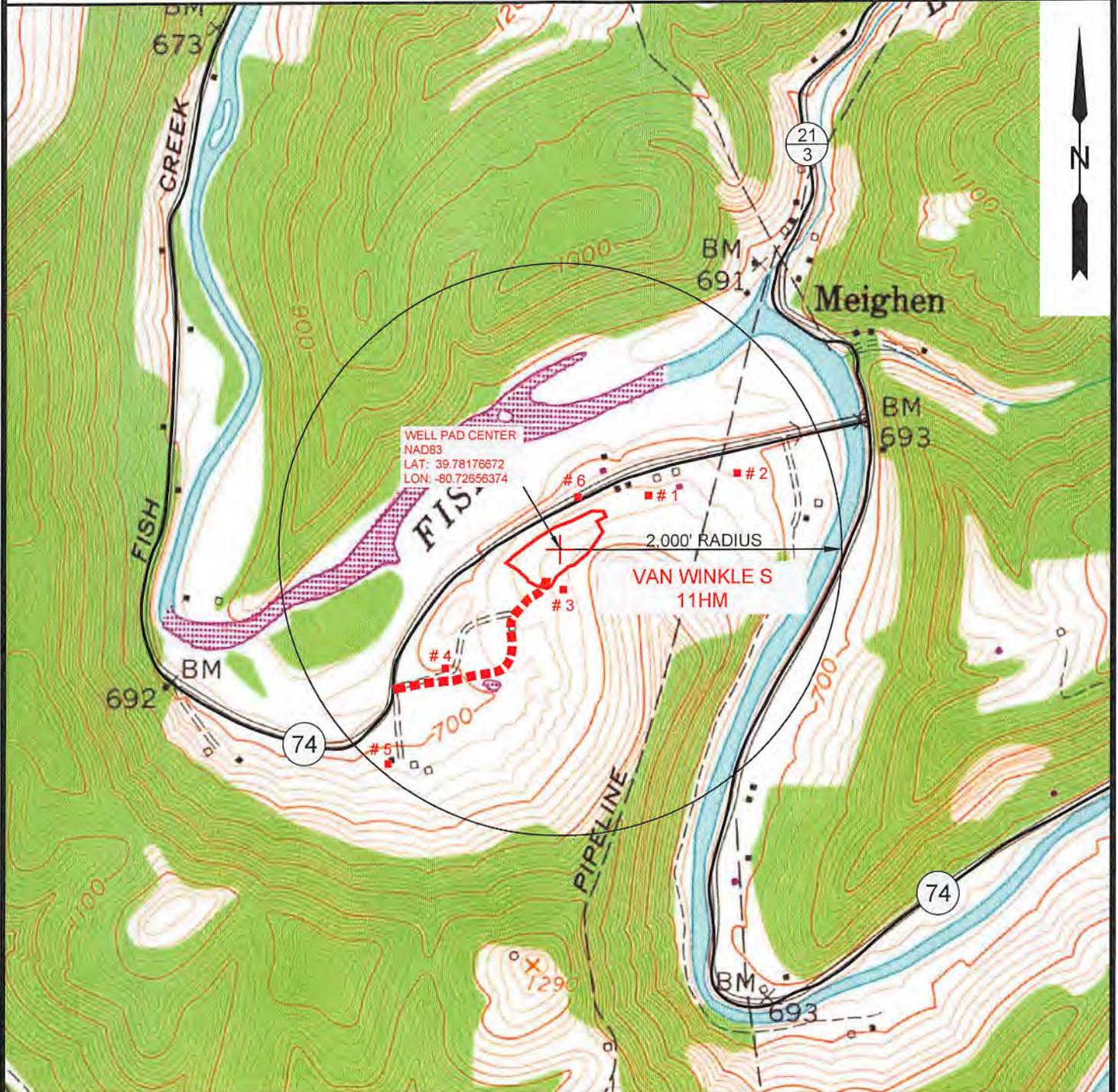
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03/19/2021

PROPOSED
VAN WINKLE S - 11HM 4705102360



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 304.253.5296 slsww.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'	



03/19/2021

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:

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WV Department of Environmental Protection

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 Pethel, 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 Pethel, 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-hillop.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.

4705102360

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

Additional Mineral Owner:

Dennis W. Hunter
3322 Rainbow Lane
North Ft. Myers, FL 33903



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

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



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4705102360



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-11HM 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,

A handwritten signature in blue ink that reads "Gary K. Clayton".

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

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

WV Department of
Environmental Protection



TUG HILL

4705102360

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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WV Department of
Environmental Protection

OPERATOR: Tug Hill Operating, LLC WELL NO: Van Winkle S-11HM

PAD NAME: Hunter Pethtel

REVIEWED BY: Amy L. Morris SIGNATURE: *Amy L. Morris*

WELL RESTRICTIONS CHECKLIST

HORIZONTAL 6A WELL

Well Restrictions

- At Least 100 Feet from Pad and LOD (including any E&S Control Feature) to any Perennial Stream, Lake, Pond, Reservoir or Wetland; OR
 DEP Waiver and Permit Conditions
- At Least 300 Feet from Pad and LOD (including any E&S Control Feature) to any Naturally Producing Trout Stream; OR
 DEP Waiver and Permit Conditions
- At Least 1000 Feet from Pad and LOD (including any E&S Control Feature) to any Groundwater Intake or Public Water Supply; OR
 DEP Waiver and Permit Conditions
- At Least 250 Feet from an Existing Water Well or Developed Spring to Well Being Drilled; OR
 Surface Owner Waiver and Recorded with County Clerk, OR
 DEP Variance and Permit Conditions
- At Least 625 Feet from an Occupied Dwelling Structure to Center of the Pad; OR
 Surface Owner Waiver and Recorded with County Clerk, OR
 DEP Variance and Permit Conditions
- At Least 625 Feet from Agricultural Buildings Larger than 2500 Square Feet to the Center of the Pad; OR
 Surface Owner Waiver and Recorded with County Clerk, OR
 DEP Variance and Permit Conditions

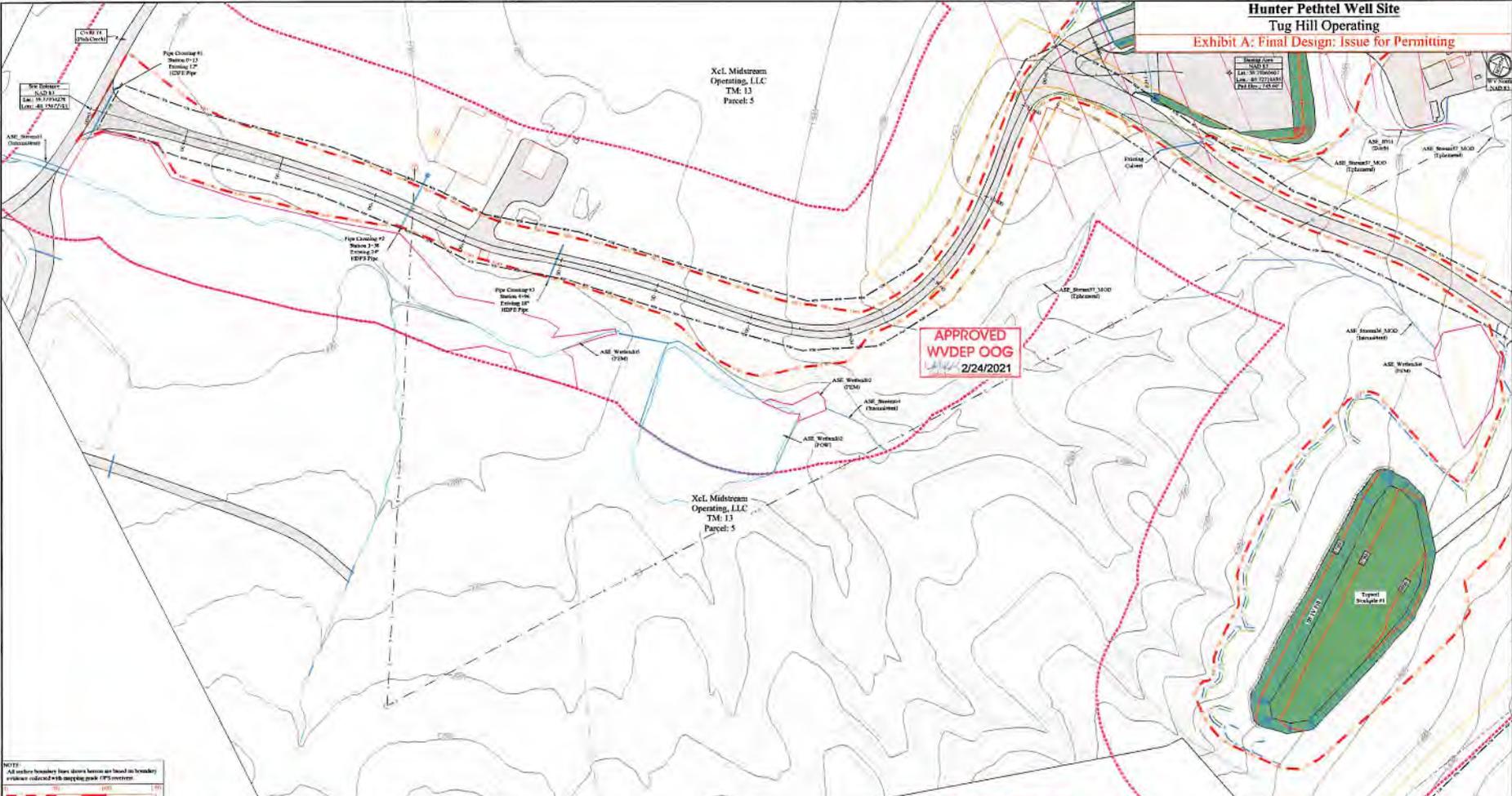
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WV Department of
Environmental Protection
03/19/2021

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

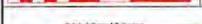
Xel Midstream
 Operating, LLC
 TM 13
 Parcel 5

APPROVED
WVDEP OOG
 2/24/2021

APPROVED
WVDEP OOG
 2/24/2021



NOTE:
 All section boundaries shown herein are based on boundary evidence collected with mapping grade (GPS) receivers.



Legend

- Original Contour 2' Contour
- Original Contour 10' Contour
- Design 2' Contour
- Design 10' Contour
- Channel of Stream
- Proposed Area
- 2" P. Compact Filter Sock
- Super Silt Fence
- Leak of Ditch/Channel
- Area of Impact
- Proposed One Way
- Existing Utility Pole/Line
- Channel Area
- Property Line
- FWA Wetland
- POW Wetland
- FW Wetland
- Perennial Stream
- Intermittent Stream
- Epifaunal Stream
- Abandoned Ditch
- Top Key
- Disturbed Channel/Sliver Area
- Stream Check Dam

Disturbed Area

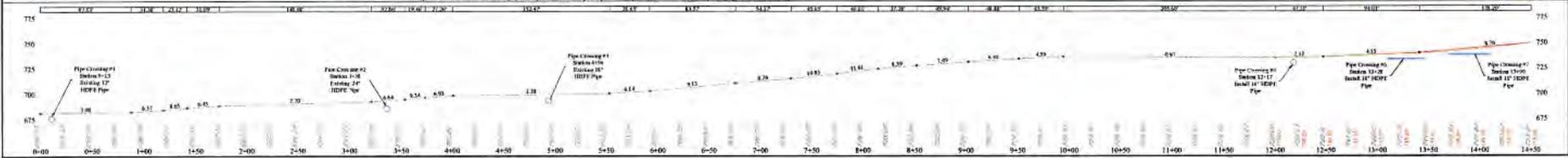
WV FFA Construction	13,732
Production Pad Construction	1,332
Support Area Construction	9,472
Access Road Construction	1,292
Final Access Road	1,332
Additional Channel	7,782
Total Disturbed Area	35,942

Access Road

Section Owner	TM Parcel	Road Length	Type
Xel Midstream Operating, LLC	13.5	1.000	Well Pad Access Road
Xel Midstream Operating, LLC	13.5	97.000	Production Pad Access Road
Xel Midstream Operating, LLC	13.5	132.000	Support Area Access Road

Additional Information

WV Wetland Area Disturbed	7,782
Total Linear Feet of Access Road	1,332



Revision
 Date: 11/20/20
 Scale: As Shown
 Designed By: J.S.
 File No.
 Sheet 9 of 13

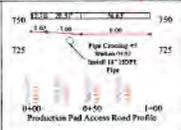
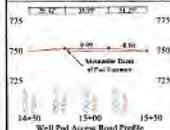
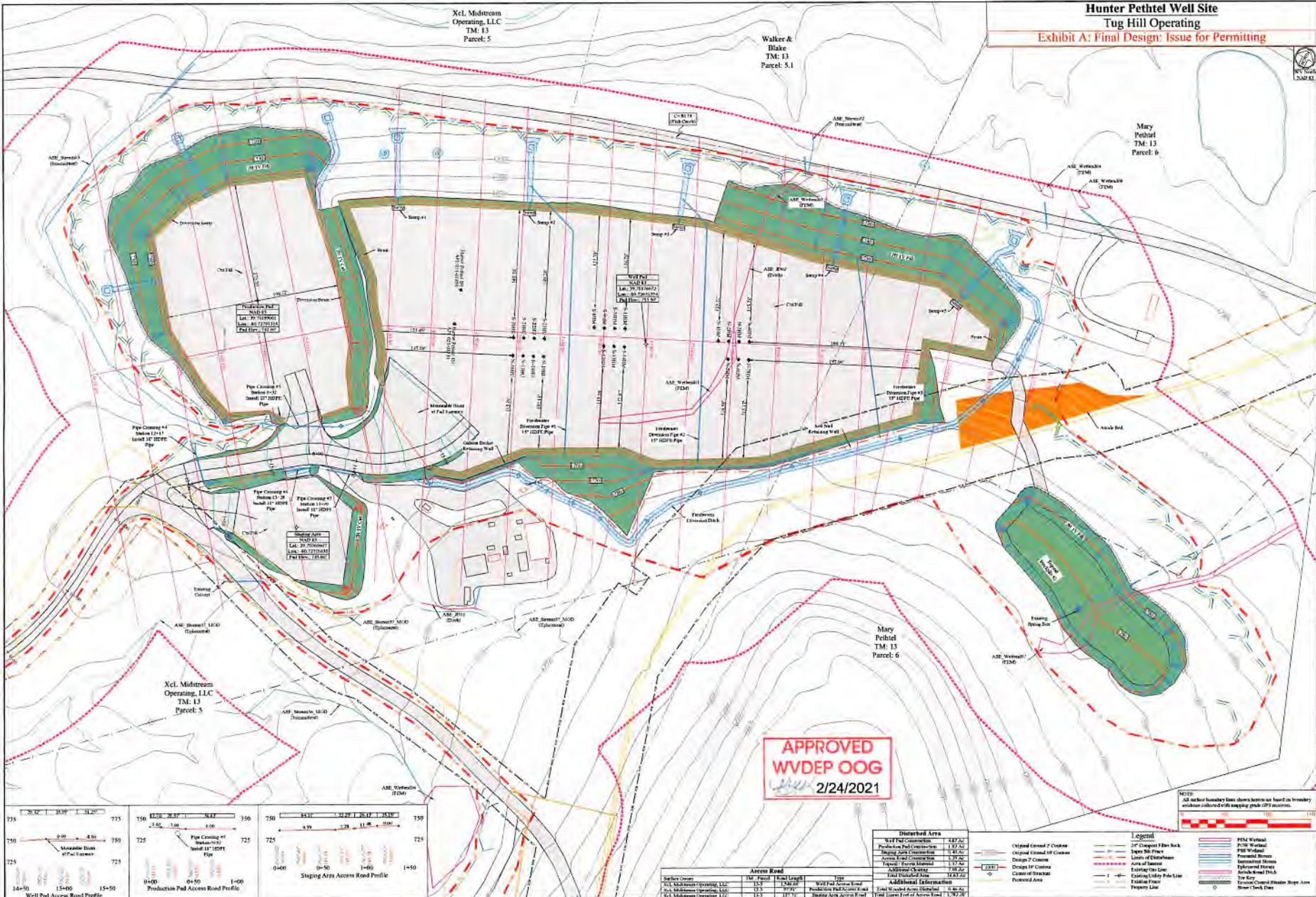
TUG HILL
 OPERATING

THIS DOCUMENT PREPARED FOR TUG HILL OPERATING

KCS Surveying

Hunter Pethel Well Site
 Neale District
 Marshall County, WV

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



Surface Owner	IMP	Parcel	Block Length	TYPE
XCL Midstream Operating, LLC	12.5	13	797.0'	Well Pad Access Road
XCL Midstream Operating, LLC	12.5	13	797.0'	Production Pad Access Road
XCL Midstream Operating, LLC	12.5	13	107.1'	Staging Area Access Road
Total Road Length of Access Road: 1,701.1'				

Disturbed Area	Area
Well Pad Construction	1,877.0'
Production Pad Construction	1,132.0'
Staging Area Construction	17.0'
Access Road Construction	1,222.0'
Forest/Tree Material	1,177.0'
Additional Disturbance	7,000.0'
Total Disturbed Area	12,425.0'

Original Ground 2' Contour	Original Ground 10' Contour	Design 2' Contour	Design 10' Contour	Clear of Structure	Proposed Area
----------------------------	-----------------------------	-------------------	--------------------	--------------------	---------------

Legend	Symbol
20' Contour Elevation	(Symbol)
Open Well Pads	(Symbol)
Level of Disturbance	(Symbol)
Area of Interest	(Symbol)
Existing Utility Pole Line	(Symbol)
Existing Property Line	(Symbol)
Property Line	(Symbol)

Legend	Symbol
20' Contour Elevation	(Symbol)
Open Well Pads	(Symbol)
Level of Disturbance	(Symbol)
Area of Interest	(Symbol)
Existing Utility Pole Line	(Symbol)
Existing Property Line	(Symbol)
Property Line	(Symbol)

TUG HILL
OPERATING

THIS DOCUMENT PREPARED FOR
TUG HILL OPERATING

K&S
SURVEYING
INCORPORATED

Hunter Pethel Well Site
Marshall District
Marshall County, WV

Date: 02/24/2021
Scale: As Shown
Designed By: ZS
File No:
Sheet 16 of 17